

SYRACUSE UNIVERSITY



3 2911 02438950 4

LIBRARY

SCHOOL OF CITIZENSHIP
AND AFFAIRS



Class 304

Book W258
V. 5

Department or Collection

Citizenship

129023

STORAGE

MAY '65 100 Dec '52 MW

241

GLIMPSES OF THE COSMOS

BY
LESTER F. WARD

VOLUME V
PERIOD, 1893-1897. AGE, 52-55

Nihil magnum in terra praeter hominem,
nihil magnum in homine praeter mentem
et animum.—PHAVORINUS.

Citius emergit veritas ex errore quam
ex confusione.—BACON.

G. P. PUTNAM'S SONS
NEW YORK AND LONDON
The Knickerbocker Press
1917

SYRACUSE UNIVERSITY
LIBRARY

COPYRIGHT, 1917
BY
SARAH C. COMSTOCK

The Knickerbocker Press, New York

8
V35g
W3
V.6
Y.5

The new psychology. Transfer of attention from intellect to feeling. The science subdivided into subjective psychology, furnishing the social forces, and objective psychology, directing them, the two branches constituting the psychic factors of civilization. Work so entitled written and published.

Subjective psychology. Value of passion.

Les passions de l'âme sont toutes bonnes de leur nature. C'est d'elles que dépend tout le bien et le mal de cette vie.—DESCARTES.

L'esprit est l'œil de l'âme, non sa force. Sa force est dans le cœur, c'est-à-dire dans les passions.—VAUVENARGUES.

Ding an sich ist allem
der Wille.—SCHOPENHAUER.

Objective psychology. Thought not a divine, all-pervading essence and creator of all things, but a product of nature and biotic organization, the last and latest step in evolution.

Nicht ein Intellekt hat die Natur hervorgebracht, sondern die Natur den Intellekt.
—SCHOPENHAUER.

Primordial trunk of the mind. Intellect an advantageous faculty developed by natural selection as a condition to the existence of terrestrial animals.

Évidemment, l'utilité fut d'abord toute vitale et sensible. Les sens ont été organisés, par voie d'adaptation progressive, non pour servir à des connaissances intellectuelles et spéculatives, comme celles dont parle Platon, mais pour répondre aux besoins très pratiques de l'appétit et du "vouloir-vivre."—ALFRED FOUILLÉE.

The storage batteries of nature. Wind as stored energy. Continuity of structure and function. The order of nature. Platforms of progress. Turning-points of evolution. Cosmical crises. Life, feeling, thought.

Every man may be, and at some time is, lifted to a platform whence he looks beyond sense to moral and spiritual truth, and in that mood deals sovereignly with matter, and strings worlds like beads upon his thought.—EMERSON.

La pensée humaine est le résumé de toutes les énergies de la nature, puisqu'elle les assimile toutes.

•—FERNAND PAPILLON.

He breathed forth the universe!
Vedas, Sâstras, all are His!
Senses and the inner souls,
Worlds, the mountains and the seas!
Seest thou this transparent crystal?
Like this, without form is He!
He breathed forth this universe!
And the worlds will in Him be!
—BRIHADARANGAKA UPANISHAD.

He is Life—Intelligence pure!
He is Truth and He is Light!
His soul pervades the universe,
Like ether—escapes our mortal sight!
From Him alone all works proceed,
All wishes and all feelings spring.
Serene and calm, He never speaks,
But in Himself holds everything!
—CHHÂNDOGYA UPANISHAD.

Social philosophy. The hierarchy of the sciences. Man and the universe. The telic faculty. Telesis.

We have lost so much Greek literature that no one can say that some old Greek may not have been very fond of *τελεις*!—THOMAS D. SEYMOUR, in litt.

Contents of Volume V.

NO.	PAGE
349. THE PSYCHIC FACTORS OF CIVILIZATION . . .	I
350. EARLY EDUCATION AND PRECOCITY . . .	28
351. [THIRD ANNOUNCEMENT OF THE PSYCHIC FACTORS OF CIVILIZATION]	32
352. ADMINISTRATIVE REPORT FOR THE YEAR ENDING JUNE 30, 1891	34
353. REPORT ON THE DEPARTMENT OF FOSSIL PLANTS IN THE U. S. NATIONAL MUSEUM [FOR THE YEAR ENDING JUNE 30], 1891	34
354. BIBLIOGRAPHY FOR THE YEAR ENDING JUNE 30, 1891	35
355. THE POLITICAL ETHICS OF HERBERT SPENCER .	38 ✓
356. A MONISTIC THEORY OF MIND	67 ✓
357. STATUS OF THE MIND PROBLEM	69 ✓
358. FROST PLANTS	99
359. THE EXEMPTION OF WOMEN FROM LABOR . .	100 ✓
360. REVIEW OF THE DISTRIBUTION OF WEALTH; BY JOHN R. COMMONS, NEW YORK AND LONDON: MACMILLAN & Co., 1893	109
361. SPENCER-SMASHING AT WASHINGTON	109 ✓
362. FOSSIL CYCADEAN TRUNKS OF NORTH AMERICA, WITH A REVISION OF THE GENUS CYCADEOIDEA BUCKLAND	III

NO.	PAGE
363. [COXEY'S "ARMY"]	112
364. PRINCIPES ET MÉTHODES D'ÉTUDE DE CORRÉLATION GÉOLOGIQUE AU MOYEN DES PLANTES FOSSILES .	112
365. THE CRETACEOUS RIM OF THE BLACK HILLS . . .	115
366. WEISMANN'S CONCESSIONS	117
367. HEGEL ON THE STATE	128 ✓
368. RECENT DISCOVERIES OF FOSSIL CYCADEAN TRUNKS IN THE POTOMAC FORMATION OF MARYLAND .	133
369. SOCIOLOGY [A DEFINITION OF SOCIOLOGY AND ESPECIALLY OF APPLIED SOCIOLOGY] . . .	134
370. ADMINISTRATIVE REPORT FOR THE YEAR ENDING JUNE 30, 1892	135
371. REPORT ON THE DEPARTMENT OF FOSSIL PLANTS IN THE U. S. NATIONAL MUSEUM [FOR THE YEAR ENDING JUNE 30], 1892	136
372. BIBLIOGRAPHY FOR THE YEAR ENDING JUNE 30, 1892	138
373. THE NATURAL STORAGE OF ENERGY	142
374. [EXTRACT FROM A LETTER TRANSMITTING THE MANUSCRIPT OF "THE NATURAL STORAGE OF ENERGY"]	165
375. [NOTE ON A COLLECTION OF FOSSIL PLANTS MADE BY PROFESSOR W. P. JENNEY IN THE BLACK HILLS].	165
376. VEGETATION OF THE ANCIENT WORLD	166
377. THE MESOZOIC FLORA OF PORTUGAL COMPARED WITH THAT OF THE UNITED STATES . . .	173
378. [THE TRUE RÔLE OF COMPETITION]	174
379. THE RELATION OF SOCIOLOGY TO ECONOMICS .	174

CONTENTS

xi

NO.	PAGE
380. WILLIAM BOWER TAYLOR	175
381. STATIC AND DYNAMIC SOCIOLOGY	176
382. REMARKS ON THE GENUS CAULINITES	192
383. CHRISTIAN SOCIOLOGY	194
384. RELATION OF SOCIOLOGY TO ANTHROPOLOGY.	195
385. THE NOMENCLATURE QUESTION	197
386. SAPORTA AND WILLIAMSON AND THEIR WORK IN PALEOBOTANY	205
387. THE PLACE OF SOCIOLOGY AMONG THE SCIENCES. CONTRIBUTIONS TO SOCIAL PHILOSOPHY, I	218 ✓
388. FOSSIL PLANTS	224
389. REVIEW OF LA RECHERCHE DE L'UNITÉ, DEUXIÈME EDITION. BY E. DE ROBERTY. "BIBLIOTHÈQUE DE PHILOSOPHIE CONTEMPORAINE." PARIS: FÉLIX ALCAN, ÉDITEUR. 1894; AND AUGUSTE COMTE ET HERBERT SPENCER: CONTRIBUTION À L'HISTOIRE DES IDÉES PHILOSOPHIQUES AU XIX. SIÈCLE. DEUXIÈME EDITION. BY E. DE ROBERTY. "BIBLIOTHÈQUE DE PHILOSOPHIE CONTEMPORAINE." PARIS: FÉLIX ALCAN, ÉDITEUR. 1895	226
390. SOCIOLOGY AND COSMOLOGY. CONTRIBUTIONS TO SOCIAL PHILOSOPHY, II.	227
391. PLUTOCRACY AND PATERNALISM	228 ✓
392. SOCIOLOGY AND BIOLOGY. CONTRIBUTIONS TO SOCIAL PHILOSOPHY, III.	241
393. ADMINISTRATIVE REPORT FOR THE YEAR ENDING JUNE 30, 1893	241
394. ROMANES ON DARWINISM	242

NO.		PAGE
395.	VOLUNTARY ORGANIZATION	242 ✓
396.	NEGATIVE AND POSITIVE WANTS	243
397.	REPORT ON THE DEPARTMENT OF FOSSIL PLANTS IN THE U. S. NATIONAL MUSEUM FOR THE YEAR ENDING JUNE 30, 1893.	246
398.	BIBLIOGRAPHY FOR THE YEAR ENDING JUNE 30, 1893	246
399.	SOCIOLOGY AND ANTHROPOLOGY. CONTRIBUTIONS TO SOCIAL PHILOSOPHY, IV.	250
400.	THE METAPHYSICS OF ROMANES. REVIEW OF "MIND AND MOTION AND MONISM." BY THE LATE GEORGE JOHN ROMANES. CLÔTH, 170 PAGES, \$1.25. NEW YORK AND LONDON: LONGMANS, GREEN & CO. 1895	250
401.	THE FILIATION OF THE SCIENCES	252
402.	SOCIOLOGY AND PSYCHOLOGY. CONTRIBUTIONS TO SOCIAL PHILOSOPHY, V.	258
403.	REVIEW OF THE THEORY OF SOCIAL FORCES; BY SIMON N. PATTEN, PH.D. SUPPLEMENT TO THE ANNALS OF THE AMERICAN ACADEMY OF POLITI- CAL AND SOCIAL SCIENCE, VOL. VII., NO. 1, JANUARY, 1896, PHILADELPHIA, P. 151	258
404.	ADMINISTRATIVE REPORT FOR THE YEAR ENDING JUNE 30, 1894	259
405.	THE POTOMAC FORMATION	260
406.	THE DATA OF SOCIOLOGY. CONTRIBUTIONS TO SOCIAL PHILOSOPHY, VI.	263
407.	PROFESSOR GIDDINGS'S PRINCIPLES OF SOCIOLOGY. "THE PRINCIPLES OF SOCIOLOGY." AN ANALY- SIS OF THE PHENOMENA OF ASSOCIATION AND OF SOCIAL ORGANIZATION. BY FRANKLIN HENRY GIDDINGS, M.A., PROFESSOR OF SOCIOLOGY IN	

CONTENTS

xiii

NO.		PAGE
	COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK. CLOTH, 476 PAGES, \$3. NEW YORK: MACMILLAN & Co..	263
408.	REVIEW OF "THE PRIMARY FACTORS OF ORGANIC EVOLUTION." BY E. P. COPE, PH.D. CLOTH, 563 PAGES, \$2. CHICAGO: THE OPEN COURT PUBLISHING Co.	266
409.	FOSSIL PLANTS OF THE WEALDEN	268
410.	REVIEW OF LECKY'S DEMOCRACY AND LIBERTY. "DEMOCRACY AND LIBERTY." BY WILLIAM EDWARD HARTPOLE LECKY. NEW YORK: LONGMANS, GREEN & Co. 1896, 2 VOLS.	268
411.	ETHICAL ASPECTS OF SOCIAL SCIENCE	269 ✓
412.	REVIEW OF PROFESSOR GIDDINGS'S PRINCIPLES OF SOCIOLOGY	282
413.	THE SOCIAL FORCES. CONTRIBUTIONS TO SOCIAL PHILOSOPHY, VII	305 ✓
414.	REVIEW OF "THE LIFE AND LETTERS OF GEORGE JOHN ROMANES, M.A., LL.D., F.R.S." WRITTEN AND EDITED BY HIS WIFE. CLOTH, 360 PAGES, \$4.00. NEW YORK: LONGMANS, GREEN & Co.	306
415.	REVIEW OF AN EXAMINATION OF WEISMANNISM. BY GEORGE JOHN ROMANES, M.A., LL.D., F.R.S. CHICAGO: THE OPEN COURT PUBLISHING Co. RELIGION OF SCIENCE LIBRARY, No. 18, MARCH, 1896	308
416.	[NOTICE OF PROFESSOR GIDDINGS'S PRINCIPLES OF SOCIOLOGY]	308
417.	VOLUNTARY ORGANIZATION	313

NO.	PAGE
418. THE MECHANICS OF SOCIETY. CONTRIBUTIONS TO SOCIAL PHILOSOPHY, VIII	318
419. REVIEW OF SOCIAL RIGHTS AND DUTIES. ADDRESSES TO ETHICAL SOCIETIES. BY LESLIE STEPHEN. IN TWO VOLUMES, 8VO. LONDON: SWAN, SONNENSCHN & CO.	319
420. ADMINISTRATIVE REPORT FOR THE YEAR ENDING JUNE 30, 1895	320
421. SOME ANALOGIES IN THE LOWER CRETACEOUS OF EUROPE AND AMERICA	320
422. THE PURPOSE OF SOCIOLOGY. CONTRIBUTIONS TO SOCIAL PHILOSOPHY, IX	323
423. REVIEW OF L'ÉTHIQUE.—LE BIEN ET LE MAL; ESSAI SUR LA MORALE CONSIDÉRÉE COMME SOCIOLOGIE PREMIÈRE. PAR E. DE ROBERTY. PARIS, FÉLIX ALCAN, ÉDITEUR, 1896. PAGES XXIV + 237, 8VO	323
424. AGE OF THE ISLAND SERIES	324
425. RECONNAISSANCE THROUGH THE INDIAN TERRITORY, OKLAHOMA AND SOUTHWESTERN KANSAS	324
426. REPORT ON THE DEPARTMENT OF FOSSIL PLANTS IN THE U. S. NATIONAL MUSEUM FOR THE YEAR ENDING JUNE 30, 1894.	325
427. BIBLIOGRAPHY FOR THE YEAR ENDING JUNE 30, 1894	325
428. SOCIAL GENESIS. CONTRIBUTIONS TO SOCIAL PHILOSOPHY, X	327
429. [THE RURALIZATION OF CITY POPULATIONS]	327
430. INDIVIDUAL TELESIS. CONTRIBUTIONS TO SOCIAL PHILOSOPHY, XI	329 ✓

CONTENTS

xv

NO,	PAGE
431. ANNOUNCEMENT OF DYNAMIC SOCIOLOGY, SECOND EDITION	329 ✓
432. PROFESSOR FONTAINE AND DR. NEWBERRY ON THE AGE OF THE POTOMAC FORMATION	332
433. DESCRIPTIONS OF THE SPECIES OF CYCADEOIDEA, OR FOSSIL CYCADEAN TRUNKS, THUS FAR DISCOVERED IN THE IRON ORE BELT, POTOMAC FORMATION, OF MARYLAND	335
434. COLLECTIVE TELESIS. CONTRIBUTIONS TO SOCIAL PHILOSOPHY, XII.	336 ✓
435. HERBERT SPENCER'S SOCIOLOGY	341 ✓
436. REVIEW OF THE SCIENCE OF MYTHOLOGY	344

Glimpses of the Cosmos

October 25, 1893—Ætat. 52.

349. The Psychic Factors of Civilization

History.—Written January 1 to December 26, 1892. The bulk of the work, all, in fact, except Chapters XXXIII and XXXVIII, was written from January 1 to March 17th. None of it was rewritten.

AFTER the appearance of *Dynamic Sociology* in 1883, I dropped philosophy for the most part during a number of years and devoted myself almost exclusively to science, for the pursuit of which my connection with the United States Geological Survey afforded such a splendid opportunity. But echoes of my book kept coming to my ears, and the apparent dulness of the critics in failing to comprehend the simplest principles somewhat exasperated me. But I did not wish to put the responsibility wholly upon them, and I realized that a part of it must belong to me in assuming too much on their part.

The great stumbling block was my theory of social forces, which had seemed to me too simple and self-evident to require a minute psychological analysis. They were simply defined, assumed as known, and then very thoroughly classified and exhaustively treated. On November 7, 1889, a club was formed for the reading of Schopenhauer's works, and the *Welt als Wille und Vorstellung* was read that winter. It impressed me profoundly, as I saw that Schopenhauer's *Wille* was the same as my social forces. I also saw that his philosophy gave a subjective trend to human thought. Thenceforward my mind turned largely to psychology, and especially to subjective psychology, or the philosophy of the feelings. Being asked to address a joint meeting of the Channing Club and the Emerson Art Club

in the fall of 1891, I prepared notes on what I first called *Philosophy from the Side of the Feelings*, and later *Subjective Psychology, or the Philosophy of the Feelings*, and delivered the address on December 17, 1891, before a large but very select audience at All Souls Church. It was too long (an hour and three quarters), but all stayed and heard me through. They also gave me a vote of thanks and made complimentary speeches.

"The congratulations at the close of the meeting were profuse. It was the most important effort I ever made at off-hand speaking, and there is no subject in which I am more interested than that of Subjective Psychology or the Philosophy of the Feelings."

So runs the record. Mr. Victor Louis Mason was present and took down my remarks in shorthand, and he was good enough to write them out on the typewriter and give them to me. Words that he was unable to understand he left space for, and I have gone through and inserted them and revised the manuscript. That manuscript I still possess.

As that address was delivered before I had decided to write a book, and as it so largely foreshadows the book itself, I will introduce it here.

LADIES AND GENTLEMEN:—

It shall be my principal purpose this evening to draw your attention to what I regard as an important advance—an advance almost amounting to a revolution—or a change of front in philosophy, which is going on at the present time, and has been in process for some fifty years and upwards. There are two kinds of philosophy which may be classified respectively as cosmology and psychology. Cosmology deals with the universe, as the term implies, and philosophers of all ages have been working at the universe with the view to understand the one we have, or to create one of their own. They sometimes characterize this as the macrocosm, as distinguished from the study of man, whom they call the microcosm; but in studying man they have almost exclusively, until recently, confined their investigations to the mind of man, and, as I shall endeavor to show, to one—important it is true—but relatively small department of the human mind. The great cosmologists or cosmological philosophers may be enumerated. I will mention the names of only a few as illustrative of what I mean by cosmological philosophy. Among the ancients: Thales, Pythagoras, Democritus, Lucretius, and certainly Aristotle, whether we include Socrates or not; in the middle ages, St. Augustine and the other metaphysical dialecticians; in more modern times: Bacon, Hobbes, Descartes, Spinoza, Leibnitz, and probably, Newton; and still more recently, within the present century, Comte; and of our living philosophers, certainly Spencer. But the revolution which has taken place in cosmology, while it is equally great with that which has taken place in psychology, has led to our modern scientific philosophy, and it is not my purpose to dwell upon this change. Note, however, that we now have, in place of philosophers proper, great men of science—men like Darwin, Huxley, Tyndall, and many others.

The revolution in psychology, which is less important, it is true, is the chief topic for this evening. This revolution has been from the objective towards the subjective, or in plainer terms, from a study of the intellect or the reason towards a study of the feelings or the soul. There is no word in our

language, perhaps, which has so many difficulties as the word "soul," and some of my friends who have heard me use it with a somewhat technical meaning have objected to it and suggested that it would be better to drop it entirely from our vocabulary; but it seems to me to be a useful word, and I may say briefly that I regard the soul as constituting the feelings taken collectively.

We have learned within the last century what was little understood before, that the human mind has a twofold nature: it is objective and subjective. It has these two great departments which must be studied separately and independently; not that they cannot be studied together; but they are capable of being studied entirely independent of each other, except, perhaps, at the very starting point. The initial elements of those two great departments are what we express by the words respectively, *Sensation* and *Perception*. I put sensation first because it *must be* first. Without sensation there can be no perception. Now this initial step in the psychological phenomenon which we call sensation is the basis of all the subjective phenomena of mind. The immediate result of sensation is perception; perhaps necessarily so, but upon this point there may be room for doubt as we shall see.

Much has been said, of course, about the "five senses," and if we look at them from the point of view of duality of mind we may arrange them in the natural order they would assume respecting these two great departments of mind. If we touch an object with the finger point, for instance, as all the old psychologists or philosophers, as they called themselves, have told us and explained to us accurately (and any one can verify it for himself) there are two phenomena connected with that touch. The first is sensation—we feel something. An impression is made upon the mind, upon the organism; but coupled with that, and instantaneously with it, we gather some kind of a notion of the nature of the object touched—we learn something of the object; and it is this that has led me to use the term "objective" for that study of psychology which deals with the perceptive faculties, and all that grows out of perception. The order in which we might arrange the five senses relative to these phenomena would be somewhat like this, the first senses mentioned being those in which the sensation is greatest and the perception least: (1) taste, (2) smell, (3) touch, (4) hearing, (5) sight or vision. In taste it is nearly all sensation. An object tasted gives very little idea of its nature except the particular quality which is tasted. Almost the same is true of the sense of smell, and some might prefer to reverse these two. But touch is, as I have just explained, capable of giving us an idea of the object as well as the sensation which it produces, and there may be a great range of difference arising from the nature of the object, its form and its qualities. Our finger ends, as we all know, are specially adapted to give us perceptive knowledge, and they do this without giving us any very strong sensation. There is no pain in touch, and yet we have a very clear idea of the object felt. With hearing, as you will note, we have very little sensation, scarcely any; but we do have a very distinct idea of a certain class of objects. With vision the sensation is almost entirely in abeyance. When we look at the object there is no sensation; we simply see and take in the mind the qualities of the object seen. Arranging the senses according to the objective side of psychology we would exactly reverse the order as given above.

The first philosopher who perceived and expressed this duality of mind was Kant. He subdivided the mind into the two great departments of sense and intellect, as we perhaps may best translate the German words. I have never seen an English translation and am not certain what English words are usually given for them; but sense or feeling would be the subjective, and intellect or understanding the objective. Kant's own words are *Sinnlichkeit* and *Verstand*. I have been told by German scholars that the modern meaning of the word *Sinnlichkeit* is quite different from that which Kant uses, and that he used it in a decidedly technical sense. But he went on, and his philosophy consists almost exclusively in the study of the objective side of psychology. He dealt with the reason—the pure reason—with the judgment and the faculties of thought—the intellect. Now, in order to get this out of our way, I will stop

and endeavor to follow rapidly through the series of mental phenomena that take place subsequent to perception. Different authors use different terms; some use a larger number of qualities or faculties of the mind than others, but upon the whole, the classification which I shall give is, perhaps, as near to the average as given by the metaphysicians and intellectual philosophers as any that we have. The next step after perception has been called cognition. Some omit this entirely and consider it equivalent to perception. Then follows conception, but this implies a plurality of perceptions, for with the plurality of perceptions involved in the recognition or knowledge of the object there comes to the mind a conception of the object; it is merely a more thorough knowledge of its properties. Next using all our conceptions we are able to form judgments, we are able to compare objects, and apprehend their agreement or disagreement. From these judgments we are able to carry on a train of reasoning. Besides we have other faculties which have been much dwelt upon. Among the most important is memory, by which these impressions, conceptions, and even judgments are, as it were, stamped upon the brain and retained, so that they may be called up at a future time and used in wider spheres of thought; and thought itself is the great object of this whole series of phenomena. We have also the imagination, a subtle phenomenon of mind, and finally the creative power, though some make imagination include the creative power. Now this class of phenomena that philosophers (so called) have, during all the ages, been working out has been considered to be the real study of the human mind.

It is a curious thing, but the fact is so well known that the statement has become trite, that in all departments of knowledge, man has first grappled with the most complex and subtle of all the phenomena in the world, and has been able only gradually to get at the fundamental principles which underlie these complex phenomena. There is no study more difficult than that of the objective phenomena of the human mind, and yet that was the study first undertaken by man. Since man became able to think at all, since the susceptibilities to these phenomena arose in the progress of the human mind, he commenced to work upon that very problem which was wholly beyond his reach.

Among the more prominent objective psychologists, as I would call the philosophers who studied these phenomena (I will not go back to ancient times, although Plato should probably be regarded as the founder of that class) may be mentioned Locke and Berkeley in England; Reid, Hume, Stewart, Brown, and Sir William Hamilton in Scotland; and Kant in Germany. Of course many others might be mentioned.

The reason for the great preference given to this objective side was the recognized superior dignity which the intellect of man possesses over his feelings. The philosophers show in this something that no creature below man possesses and, therefore, they regarded it worthy of study, and for this reason philosophy has ignored the feelings. You can count on the fingers of one hand all the subjective psychologists who have attained any eminence. I have some doubt about including Hartley, although he may be regarded as one of the pioneers. His system has never been made use of. The elder Bentham may, perhaps, be so classed, although he may also be classed among the cosmologists. In modern times we have in England Alexander Bain, who has devoted his entire energies to this study, Doctor Carpenter, and Herbert Spencer who in one of his works has gone very deeply into this subject.

But metaphysicians have been afraid and theologians have been unwilling to investigate the human soul. Metaphysicians were afraid because they feared that if they should investigate it, it might possibly prove capable of analysis, and some of the ideas that prevailed in the public mind with regard to its nature might possibly be overthrown. Theologians were unwilling to investigate it because it might give them a definite meaning, and they never thought of such a thing as its being really capable of any analysis or study. So the whole subjective study of the mind has been turned over to three great agencies, *Art, Religion, and Government*. These have always been the domain

of the feelings. They have devoted themselves exclusively to that side of the human mind. If you were to consider the matter specially and carefully you would see that all these agencies are essentially moral in their tendencies. But they are not conscious of this fact. They are not critical agencies, they are simply no more than natural agencies working without method and without thought.

The failure to devote thought to the subject of the feelings has caused them to be little understood. They have been generally looked down upon in a certain way as not worthy of study, they have been even tabooed.

The difficulty has been that in order to investigate this side of the mind it was necessary to go deeply into what may be called the philosophy of *pleasure* and *pain*, for that is what we must do if we would understand the subjective side of psychology. We must analyze those two great psychic phenomena, pleasure and pain, we must know something about them, we must find out what they are. I may detain you some little time upon this particular question because it is vital. The first point I wish to make is that pain is an abstract term and is not the opposite of pleasure. The opposite of pain is relief from pain. The second proposition is that neither pleasure nor pain is, in the strict sense of the word, necessary. In one sense they are, of course both necessary, but all depends upon what we mean by necessary. I will mention an analogous case. A great living scientific philosopher, Professor August Weismann of Germany, whose recent work on biological problems has, perhaps, produced the greatest sensation in the biological world of any publication since the appearance of Darwin's *Origin of Species*, has shown, or I might almost say proved, that death is not necessary, that the duration of life in any being, man or animal, is not affected by any necessary condition. It might have been less or more, it might have lasted indefinitely as well as to have been what it is. For example the parrot lives longer than man. The duration of life in any animal is determined by two elements, the rate of reproduction (the period of gestation, etc.) on the one hand, and the liability to destruction on the other. It is clear that three score years and ten or four score years is not the necessary limit of human life, or two hundred years the time that all parrots should exist, if the man or parrot be not destroyed; in other words there is no necessity for their dying at all, and all that Nature looks to is to see that they never die. Nature cares for the race and adapts every thing to the perpetuity of the race. I may sum up this proposition in these words: pleasure and pain are simply the condition to the existence of plastic organisms.

There is nothing so easy to destroy in the world as the soft body of an animal, and therefore, animals must have some means of protection. They have two: the first is pain and the second is pleasure, that is, susceptibility to these two. Unless an animal is so organized that it is capable of feeling disagreeable sensations upon certain contacts with its organization and of shunning those contacts it would be destroyed, and the degree of its ability to survive depends upon its sensitiveness. And this is the real reason for there having been such a thing in the world as pain. We do not assume that the oak or the great Sequoia has any sensation; each has a solid trunk to protect it. But a soft gelatinous animal must have nerves to feel and these are its protection. That is the cause of pain. A plastic organization is ever changing its nature, changing its constitution, changing the elements which constitute it. Its life depends upon the constant transformation of tissue; the same parts that are in the animal one day will be entirely changed in a very short time, depending upon the animal, the nature of its organization, etc. In order to live it must absorb nutriment, it must take into its body the nutritious materials that lie around; but it would never do that unless it had some incentive to do it. Feeding is pleasure to the animal and induces the animal to make the necessary effort to secure the necessary food. That is a sufficient reason for this wonderful susceptibility to be developed.

Now this is the real reason for pleasure and pain; it is the only necessity for any animal to feel at all. This is going very far down into the subject, but we must discuss these subjects in this way. When we come to study the

subjective side of the mind we must go to our humble ancestors and study them. And that is the real basis for the ethical principle laid down by Herbert Spencer in his *Data of Ethics*. He says that in the long run the pleasurable is the good—pleasure is life—; the painful is bad—pain is death. That is exactly the case. Those are the conditions upon which all sentient beings have been developed, and it is the great and sufficient refutation of the entire argument for asceticism.

The end of being is happiness. That is to say the end of all being is the largest amount of innocent pleasure that can be obtained. The more we have of it the more perfect we become. The less pain we have—the less we have to suffer mentally or physically—the more likely we are to survive and develop into something better and higher. Ethics and physiology meet here, and the instinct of the animal is borne out by the highest law of morality.

Now right here we find another very tough knot. Sensations are of three kinds, indifferent, pleasurable, and painful. A painful sensation always tends to make the organization move *from* the object. A pleasurable sensation is sought. The organism will move in the direction that will secure that pleasurable sensation. We have nothing to do with the indifferent ones: they belong to the objective series and serve simply to give us a knowledge of the properties of objects. We are dealing simply with the two classes: painful and pleasurable sensations. We call the disposition or inclination to move in the direction of a pleasurable sensation a *desire*. Most of these cases can be resolved into cases in which the organization desires something, usually in the lower form some kind of nutriment or else the act of reproduction; and so desire becomes the subject for our future consideration.

What is desire? Can it be defined? Some people court it, some people appear to enjoy it, to live on anticipation and hope. But will this view of the case admit of analysis? I think not. I have studied this question for many years and in all possible forms and have finally come to the conclusion that we must admit that all desire is a form of pain—that desire is essentially painful. It is a species of disagreeable sensation. There are a great many kinds of disagreeableness, and desires, as a rule, are not the common kind, that is to say, what is directly painful to the organization, but when any one desires any thing greatly there is no pleasure in the desire itself, and the poet has well said, "Hope deferred maketh the heart sick." I regard that as a sentimental and morbid state of the mind which looks upon desire, hope, or anticipation as pleasure or enjoyment. What man wants after all is to participate; it is participation and not anticipation that he enjoys. It is true that we are capable of representing future pleasure as actual, and in this sense anticipated pleasure is pleasure, and thus in a certain degree we are able to enjoy it before we get it; but yet it is not *that* which we enjoy; and it is a morbid condition. The true progress of mankind has always been in the direction of participation enabling man to obtain that which he desires—and not merely to anticipate it. You cannot base any philosophy or legislation upon that kind of psychology; you must come down to the solid truth, that the anticipation, the hope, the desire, is after all nothing that any one should wish, nothing that any one can enjoy. What then is the definition of pleasure? The definition of pleasure in the briefest possible terms is not desire itself, but the satisfaction of desire. That *is* pleasure. It is not the desire for it, but the attaining of it. Now, this is different from the mere cessation of pain. I lay special stress on this because there are those who do not agree with me upon this point and maintain that there is no such thing as pleasure. They have argued that desire is painful, that as soon as it is obtained the pleasure ends, and therefore, they say there is no such thing as pleasure. But I maintain that there is a difference; that a distinction can be drawn between the satisfaction of desire and the mere cessation of pain, which would be negative. I have come to the conclusion that the satisfaction of desire, like all other mental processes, all other phenomena borne by the modern doctrine of psychophysics, consumes time; it may be a very brief time, but it must consume time. There is nothing

that man can do but what occupies some time. It is, therefore, something positive and not mere cessation of pain.

The pessimists, as you may call them, have presented the argument and forced it home with so much power that it becomes necessary to meet their arguments to see wherein they are incorrect. Now happiness is supposed by some to be prolonged pleasure. I regard that idea, however, as erroneous. I would rather define it as rapidly and continuously repeated pleasures. A continuous succession of rapid satisfactions of desire. Man is a constant theatre of an infinite number of desires. Happiness is the constant satisfaction of these desires as fast as they arise. This is also what I call a positive phenomenon, and not negative. You all know that there is a class of philosophers who have been trying to show that there is no such thing as happiness, simply because they have shown that there is no such thing as pleasure. Here is their argument. They say: You desire something greatly, you desire it long. At last you attain it. As soon as you have attained it you cease to desire it and where are you? Reflect a moment after having attained it. Are you any better off? Do you not simply perceive that you have got that desire out of your way and that is all? Much of this reasoning must be admitted to be true, and if there is not some way of answering it, then they have the better of the argument. I have studied it for myself; I have frequently longed for something and at last I have attained it. Then I would pause and think: Why, this is not what I expected, this is not what I thought it would be. I do not want it any more because I have it: that pain is ended. And so far as the immediate object itself is concerned, unless it gives rise to new pleasures, there is no great satisfaction; no happiness or bliss attending it.

You know that the philosophers all tell you that the idea that wealth or greatness must make happiness is an illusion; and that the peasant or poor man is happier than the wealthy or the great man. This may be true in many cases, but I have my own views on this point and I cannot agree with that kind of reasoning. But such popular notions go to show that it is worth our while to look into it and not merely deny it dogmatically. This too, is why happiness cannot be intense. It consists of a series of repeated satisfactions and there is no possibility of their being intense pleasure; pleasure is usually moderate. All pleasures relative to pains are moderate. Pain may go so far as to produce death; but pleasure never goes so far. There is no need that pleasure should be as intense as pain. The only great intense pleasure is the case where the need is very great—the great need of nature to continue the race. The need for food is not so important to nature—that is, the need for any particular food—as is the need that the race should not perish from the earth. The consequence is that the pleasure attending the continuation of the race is the most intense of all pleasures.

I have used the word *desire* in a wide, general sense as a generic term. It includes a great number of other modified forms. The term *appetence* is perhaps the most expressive because it indicates the seeking of the object of desire, hunger, thirst, etc., often used metaphorically. Love is a great desire, the greatest of all desires, passing into passion and lust. And when we rise into the higher intellectual fields we have what we call aspiration, while in the practical world we have ambition. In other words, what I mean by desire is the great *nîsus* of all organic life that creates or produces pleasure.

Now I am about to speak of a certain philosopher, and I may remark in general that great men are apt to be condemned for some of the most incidental things they do, while the great things they do are often entirely overlooked. Such a man was Voltaire; it certainly was the case with Auguste Comte; and in our country Thomas Paine is an example. I am obliged in this discussion to speak of Schopenhauer. I expect most of you will figuratively throw up your hands and cry out "pessimist"! But I say to you all that both his pessimism and his idealism might be blotted out and there would still remain one of the greatest philosophies that has ever been written. He ranks with the other great philosophers, and I am glad to find that at present German, English, and to some extent, American philosophers are beginning to understand Scho-

penhauer. Voltaire once said of some great man, "It is a prerogative of true genius to make great mistakes with impunity." I would apply this dictum to Schopenhauer. A man who has done as much as Schopenhauer has done, may be pardoned for almost any amount of mistakes. I am almost disposed to pardon his pessimism and his idealism; but I must admit that he of all authors has forced these doctrines home with greater power than has ever been done before or since. Schopenhauer's *sufficient reason* or *Satz vom Grunde* was the first philosophic recognition of the *Law of causation*, as it is now understood by scientific men; and Schopenhauer's *will* is one of the greatest thoughts that has ever been entertained in the mind of man. Schopenhauer's *will* is not what we understand by will; it is not what the modern German understands by the same word in his language. It is exactly what I have been describing as *desire*, only that it is broader, but it comes perhaps nearer to that comprehensive term which I used, the great *nisus*, than any other. In Schopenhauer the great thing of the world is the will. It is the thing-in-itself, the noumenon, and he has much to say about the assertion and the denial of the will. The denial of the will to live is the great end of his religion, I might call it, because he entertained the belief that desire is pain, that the will is constantly impelling us toward something we can never attain, or if we attain it, that is the end of it; therefore, we are all subject to one continual rush after something which, when we get it, is nothing; and all that we feel and are is pain; it is want; it is struggle; it is strife; it is hope and aspiration; and the attainment of the objects desired is simply the cessation of that aspiration. His dictum that "to live is to suffer" is rank Buddhism and may be called pessimism. I have no objection to the term. But what he has taught us is that there is such a thing as this monster will, and we are always being devoured by some great desire, or a great many desires, many of which we never attain. And the point on which I differ from him is simply that the attainment of that desire is positive and not negative; and that in almost all cases the attainment of a great desire gives rise to a series of other desires,—we may call them such,—desires which can be satisfied and, therefore, go to make up human happiness.

But here is the great doctrine which will bear the scrutiny of ages. Schopenhauer insisted that the will was primary and the intellect secondary. He, therefore, was really the pioneer in producing this great change of front in philosophy. He was the first philosopher who maintained that feeling was the great thing we should study—that the heart of man should be the main object of our philosophic investigation, and that the intellect is secondary; and in some of his flights of eloquence he bursts out with the statement that the intellect is merely a recent graft upon the human mind and is hardly worthy of any consideration at all. But he goes still further and maintains that the will is all that is. He is an idealist and with the idealist there is nothing except what is in the mind.

It may sound bold to you, but any one who will read Schopenhauer thoughtfully will come forth from the study with a whirl of ideas that will set him to thinking; and I guarantee that no one will be less wise, indeed, that every one will be wiser.

The only part of subjective psychology that the old philosophers deigned to contemplate was what they called the will. They did study the will because they thought it to be something that only man possesses, or something both human and divine; but their studies upon the will are utterly worthless because they skipped over every thing that leads to it. The consequence is that they went wild upon the subject of will and conjured up something that has no existence. If there is any such thing as will it is Schopenhauer's will.

And now I come to the practical side of the question. The only reason that any one should have for going into the subject is that this great change of front of philosophy has given us a psychology which has some value to man. We find upon investigation that this thing which is called *desire* is a true natural force in that it acts like all the other forces of nature, the physical forces, the mechanical forces; and we can rely upon it with almost the same certainty

as we can upon the laws of physics. There are certain tests of a true natural force. One is that it is uniform and will always operate in the same way under the same circumstances. Now desires of all animals, not excepting human beings, are absolutely reliable; they will always do exactly the same thing under the same circumstances. The circumstances, however, must be *exactly* the same; and this is the reason why we cannot calculate them in higher animals, much less in man. The great test of a true natural force is that it obeys the Newtonian laws of motion. Now the first of these laws is that a body will move in a straight line, that is, if there is only that one force. Is not this true of the desires of the lower creatures? We have the familiar expression of a "bee-line." What does it mean? It means that a bee always flies from a tree to his hive in a straight line unless some thing turns it aside. The second law of motion is that a body will move on the resultant of two or more forces. Take a horse that desires to go to his stable, but knows from the rein and the whip that the driver desires it to go in the opposite direction. Assume that there is nothing in the way. Let the driver relax the rein and the horse will describe a curve of constrained motion. It is acting under Newton's second law of motion under two forces. The number of illustrations might be multiplied.

But what advantage is it to man to find out the nature of desire, the great moving principle or power that underlies all organic life? What benefit can that be to man? This only: if we can learn something about those desires—the great leading ones—that actuate humanity and society as a whole we may be able to do something in the domain of life and mind and man, as we have done in the domain of mechanics and physics. We may be able to deduce the laws according to which humanity is actuated. Now what are those laws, or what is the nature of these forces? Is there any such thing as grouping together all these great forces so as to give them a definite meaning which will be uniform? I think there is. I think they may be generalized in some important system. In the first place I maintain that there are two great classes of social forces—I call them essential forces—and non-essential forces. The essential forces are the ones without which the existence of the race on the globe cannot be maintained. They may be grouped as, first the preservative forces, those that tend to preserve life, but go no further; second the reproductive forces—the great forces which result in the reproduction of the race. Not until these are satisfied can any higher desires be operative to an extent sufficient for us to make use of them. But when the race reaches a point where these two great forces are equilibrated, when each desire, when each hope shall be satisfied, new and higher ones will arise. We then have at least two great non-essential desires. The first I call the esthetic forces, which impel man to reach out toward the attainment of the beautiful. The second I call the intellectual forces. These are due to the development of the brain, and I include under this head nothing more than simply the desire for the acquisition of knowledge and for the exercise of the thinking faculty. Now, in so far as the desire to know and to think exists all the operations of the mind are desires, that is, they are forces; but only in so far. The desire for knowledge is one of the great forces that has moved the world towards civilization and although it works in a very moderate way, it produces the greatest results of all.

We find then, that subjective psychology is the basis of sociology, and sociology cannot be studied to any purpose without understanding it. Subjective psychology, we may say, has put a soul into philosophy, has given it meaning, has made it a factor in human progress. Now feeling can be regarded only as a power,—it is simply a force. There is such a thing as the study of intellect from a scientific standpoint, and I may at some future time undertake to show that there is a science of objective psychology which is of some advantage to man. It is the function and the mission of the intellectual faculties to direct the great social forces. Feeling is the wind that propels the ship, the steam power that causes the great engines to throb and the wheels to move; intellect is the helm, the rudder, that brings the ship safely into harbor.

Another great oversight of the old philosophers in studying the feelings was to regard these great social forces chiefly from the standpoint of function. That is to say, they seemed to think that the end to be obtained is to secure the preservation or the reproduction of the race, and that done there is nothing more to say. The new psychology would take an entirely different view. It would recognize that a force to be effective must be maintained, and that what we are to consider of the greatest importance is the force itself, the desire itself, until it ceases to be a force. Therefore, I draw the distinction between feeling and function as sociological factors. The attainment of these ends is nothing. It is nothing that the population of the globe is kept up. The great thing is the effort put forth in keeping it up. It is activity under the influence of these forces which has value to sociology and not the satisfaction of bringing all these forces into a state of equilibrium whereby they are no longer active. And, therefore, I draw the distinction between the objects of nature and the objects of man. The objects of nature are simply preservation and reproduction; the object of man is happiness, the enjoyment of his faculties, the satisfaction of his desires; and the object of sociology—the great value that it has to society—is the activity made necessary in order to succeed in the accomplishment of these ends.

I do not agree with the current philosophers that the great men of the world do not enjoy their existence as much as the laborer and the ignorant man. I believe every moment of their lives is worth infinitely more, not only to the world, but to themselves. In other words, I believe that they really do obtain far greater happiness. Material civilization tends to increase human happiness. Take the case of the preservative pleasures. We cook our food now and season it and enjoy it a thousand times better than in the past. And everything else that relates to living, our houses, our homes, and all our surroundings are vastly superior to what they formerly were.

We are pursuing the object of man not the objects of nature. Instead of seeking to multiply the population of the globe more rapidly than formerly we are inclined to check it to some extent; and we see to it that the quality shall be made better rather than the quantity increased in order that the happiness of man may be greater.

It is necessary that the bearing of all this upon ethics should be stated. The great social forces result in human action, and I shall endeavor to emphasize the distinction between action and conduct. Action has to do with everything that we do. All our activities come under this head. Conduct deals only with conflicts between actions. It is, perhaps, from its insignificance that I have sometimes been disposed not to enter the field of ethics; but I may say this much, that the whole tendency of ethics—that is the whole subject of ethics—is negative, and tends, so far as it goes, to prevent action. Hence it is non-progressive. The path of rectitude is a crooked path, made crooked to avoid conflict with other paths, and the ends of being are thereby lessened, checked, hemmed in—"cabined, cribbed, confined." Therefore, I regard ethics as merely a transitional phase. The highest ethics would supplant ethics entirely by such an organization of action as to render conflict impossible. Action is social energy, and if directed to useful ends, the more action the better. True morality consists in the liberation of social energy and the free exercise of human activity. Evil is relative. The wind is evil when it blows our houses down; it is good when it draws our water. Fire is evil when, in great conflagrations, cities are swept out of existence; but in warming our homes it is good. Electricity is evil when the thunderbolt dashes down upon us and takes the lives of human beings; but it is good when it sends our messages of love to distant friends. And so it is with all our evil propensities. We need to understand them. We want to study them until we understand them. And then we want to do exactly as we have done with the other natural forces: make use of them to the advantage of man.

I also have my slip notes from which I spoke on that occasion,

and I find that they cover much ground not touched in the above stenographic report, but all of which was embodied in the book. Note, for example, such heads as these: The principle of deception; intuition; intuitive perception; intuitive reason; intuitive judgment; woman's intuition. As these belong to objective psychology, I of course did not mention them, but they show that I had already worked out the most of Part II, as well as Part I, of the book. And yet, so far as I can remember, and in the absence of any record, I had not yet seriously contemplated writing a book. A month later I was favored by a visit from Dr. Edward A. Ross, and he became deeply interested in my subjective psychology. I took him to one of the meetings of our "Schopenhauerkreis," as we called the above-mentioned Club, and he took part in the reading, having heard lectures on the subject at German Universities. He asked me on December 28, to go over the notes of my lecture, and expressed himself as highly interested.

There was another subject that was greatly interesting me at the same time, and which, though it seems entirely different from psychology, still has a certain connection with it, and was ultimately embodied in the same book, as Part III, where the connection is expressed as the "Social Synthesis of the Factors." But at first it was crude, and seemed to grow out of a desire on my part to show that *Dynamic Sociology* was not an abstruse speculation, as some had charged, but a practical system applicable to living issues. One of the forms which this feeling took is described in my sketch of the article which I finally called *The Utilitarian Character of Dynamic Sociology* (see supra, Vol. IV, No. 303). Another of the forms which it took still earlier is described in my sketch of the paper on *Some Social and Economic Paradoxes* (see supra, Vol. IV, No. 250), a considerable part of which was repeated near the end of Chapter XXXIII. But the most important aspect of this general subject, and the truly psychological aspect, was that which found expression in my vice-presidential address to Section I of the American Association for the Advancement of Science, on *The Psychologic Basis of Social Economics* (see supra, Vol. IV, No. 331), the history of which is given in full. Yet this address is embodied entire in Chapter XXXIII, and is there considerably expanded.

With all these ideas brewing and brooding in my mind, whether suddenly or gradually does not appear, I find that on the first day of 1892 I had fully resolved to write a book. I went out that afternoon and walked alone for five hours. In my diary for that day, after describing my tramp, I say:

"Did some heavy thinking about my new book that I have decided to write. Conclude to have nothing to do with 'living issues.' Made an initial stroke on it in the evening, but could not decide on the title, though I am clear as to the whole subject. Wrote two pages and made some slip notes."

I may say here incidentally that the manuscript of this book is the cleanest manuscript I ever saw, as easily read as print, almost without an erasure or interlineation, and the last page is as well written as the first. Still it is the only draft. In no book I have ever written was the entire subject as completely in my head before I sat down to write it.

I find this entry in my diary: "On January 2, 1892, I had a good talk with Dr. Ross about the book, and we discussed the title. I had thought of calling it: *Sociology from the Standpoint of Psychology*. He suggested: *The Social Forces and their Direction*. I remain undecided." The next day I went to work in earnest on the book. In an envelope of miscellaneous matters I find one sheet headed: *Sociology from the Psychologic Standpoint*, under which is the heading: *Introduction*, of which two pages are written. Another sheet bearing the same title, and with: *Introduction, Part I. The Forces of Society. Part II. The Direction of Society*, has written over the top in Dr. Ross's handwriting, the title: *The Social Forces and their Direction*. Still another, all in my handwriting, has Dr. Ross's title, under which are the heads: *Introduction, Part I.—The Social Forces. Part II.—Direction of the Social Forces*. There is still another incomplete one, with the general title: *The Psychologic Basis of Sociology*, under which is written: *Part I. The Forces of Society*. This seems to have been early abandoned. All this shows the struggle I was having to find a suitable title for the book, the subject and substance of which were so clear in my mind.

Notwithstanding these difficulties, I proceeded to write the book, and I worked steadily and persistently for two months and a half, scarcely missing an evening and putting in all Sundays and holidays. I wrote rapidly, my thought being always in advance of my pen, and I fairly dashed it off. The following are the dates on which all the chapters, except the two mentioned above, were written:

The Introduction, January 1-6, 1892.

Chapter	I, January	7-15,	1892.
"	II, "	15-16,	"
"	III, "	17-19,	"
"	IV, "	20-21,	"
"	V, "	22,	"
"	VI, "	23-24,	"
"	VII, "	24-25,	"
"	VIII, "	26,	"
"	IX, "	27-February 3,	"
"	X, February	3,	"
"	XI, "	3,	"
"	XII, "	4,	"
"	XIII, "	5-7,	"
"	XIV, "	7,	"

Chapter	XV, February	9,	1892.
"	XVI,	" 10-11,	"
"	XVII,	" 11-14,	"
"	XVIII,	" 14-16,	"
"	XIX,	" 17-18,	"
"	XX,	" 19-21,	"
"	XXI,	" 21-22,	"
"	XXII,	" 23,	"
"	XXIII,	" 24-26,	"
"	XXIV,	" 26-27,	"
"	XXV,	" 27-28,	"
"	XXVI,	" 28-29,	"
"	XXVII, March	1-3,	"
"	XXVIII,	" 3-4,	"
"	XXIX,	" 4-6,	"
"	XXX,	" 6-8,	"
"	XXXI,	" 9-10,	"
"	XXXII,	" 10-11,	"
"	XXXIV,	" 12-13,	"
"	XXXV,	" 13-15,	"
"	XXXVI,	" 16,	"
"	XXXVII,	" 17,	"

On January 30, 1892, Prof. Joseph Le Conte read a paper before the Philosophical Society of Washington on *Philosophy in its Relations to Psychology and Physiology*, and I took part in the discussion, making the opening speech of fifteen minutes, in which I ventilated the views of the book in very fine style.

In writing the book I gave the chapters in most cases exactly the titles which they ultimately bore, but there were a few instances in which either the title was changed or the matter was transposed from one chapter to another. For example, I first made Chapter IX include the matter of Chapters X and XI, and afterwards divided it. Chapter XVI was first called *The Philosophy of Action*, and afterwards changed to *Social Action* to contrast with the title of the next chapter, *Social Friction*. Chapter XXII was first called *Cunning and Sagacity*, and Chapter XXIII, *Shrewdness and Tact*. Chapter XXIX was first called *Derivative Intellectual Faculties*, and was to be a short one to be followed by the one on *Inventive Genius*, but after writing it I concluded to combine these two under the last named title, and this done. What I first called Chapter XXXII was *Knowledge and Intelligence*, a very short chapter, which was followed by a longer one that I called *Intellection*. These were subsequently combined into the chapter on *Intellect* (XXXII). I did not at that time anticipate writing my Rochester address, much less, embodying it in the book, and so I began Part III with the chapter on *Meliorism*, which, under the former arrangement, became Chapter XXXIV, which it remained after combining the other two chapters and inserting the long one.

I had never felt satisfied with any of the titles that had been suggested, and as I approached the end I began to think more

seriously on the subject. About the first of March I drew up a simple list of the chapters so far as written, and on March 4, I sent a copy of it to Dr. Ross. In the same letter I proposed the new title, the one the book bears, which had finally occurred to me, and which received his hearty approval.

On March 16, 1892, the Program Committee of the Biological Society of Washington asked me to read a paper before that Society and I gave them the title: *The Biological Basis of Psychology*. It was read on March 19, largely from the manuscript of the book, and especially from Chapter VII, but there was an introductory portion written to adapt it to the Biological Society, which is not embodied in the book. I had written it out with care on the same kind of paper as the manuscript, and this has been preserved. The same is true of a concluding portion. As this biological bearing is brought out more clearly here than it is in the work itself, I think these remarks might well be introduced here as a legitimate item in its history. They are as follows:

[Preliminary portion.]

The physiological basis of psychology is regarded by most scientific men as an established truth; the direct physical connection of mind with body and the relation of brain and nervous system to thought and feeling as of organ to function is the subject of most modern psychological discussion. It is not of this that I propose to speak. I wish rather to call attention to the biological basis of psychology, to the connection of mind with life and the relation of feeling and thought to vital phenomena as marking a step in the progress of organic development. This relation is that of an effect to a cause, life having preceded mind and produced it.

First of all it is necessary to say that thought alone does not constitute all of mind, although the word is often used as if such were the case. Long before anything that can properly be called thought existed the substratum of mind had been created. Mind in its proper sense embraces two very distinct departments, feeling and thought, or sense and intellect. The former is confined exclusively to the subject, the latter results from interrelations between the subject and some kind of object, between the organism and its environment. From this results the primary subdivision of psychology into two distinct branches, the subjective and the objective branches. These are capable of being separately treated, and the science of mind accordingly consists of the two subsciences, subjective psychology and objective psychology. These two branches of mind are very differently related to life. The subjective branch is the direct product of vital phenomena, the objective branch, although also a result of living forces, is only indirectly connected with life, and is, as I shall endeavor to show, a direct outgrowth from the subjective branch. The latter is far older in point of origin, existed long without the other and finally brought it forth to complete the process of psychic development.

In conformity with this classification of psychology I shall first take up the subjective branch of mind and endeavor to show how feeling was a product of life. At the outset we are confronted with one of the most difficult of all problems, viz., that of the origin and purpose of pleasure and pain. It is not a new problem, it is as old as human reason, and there have been many attempts to solve it. But it will be necessary to reject all the theories thus far advanced as unscientific and to seek one that is scientific and in

harmony with modern scientific tendencies. This theory is that pleasure and pain have come into existence in the same way that other organic products have, in the same way that the organisms experiencing them came into existence, viz., by a process of development under the laws of evolution. More specifically, pleasure and pain are the result of the operation of natural selection and survival of the fittest in the struggle for existence.

As a general proposition embodying this truth it may be stated that *pleasure and pain are the conditions to the existence of plastic organisms*. [Page 88 follows.]

[Concluding portion.]

I trust I have satisfactorily shown that the subjective branch of mind rests upon a biological basis and has been developed in the normal manner as a condition to the existence of the class of beings possessing it. I should remark that a more accurate idea will be gained if this subjective branch is contemplated rather as the main trunk of psychic development, and the term *branch* be applied to the faculty of thought which was of so much later development and which proceeded from the first in such a manner that it may be likened to a branch of a tree, although it must be regarded as an exceedingly important one. The problem now before us is to show that this took place according to the biologic laws of development, that it had a biologic purpose, and secured a biologic end.

The faculty of thought is the intellect and the question is how the intellect could have come into existence. It must have possessed some advantage, otherwise it would not have been subject to the law of natural selection. It must have, in some way, helped the race in which it appeared to contend with its environment, otherwise the survival of the fittest would not have favored its development. It is evident that in the study of this question we must not begin with the fully developed intellect but must seek its earliest and most primitive manifestations.

In the manuscript from which I have read these extracts I have traced the further development of the intuitive faculty through a variety of ascending stages culminating in inventive genius, and shown that the powers of reasoning, reflection, abstraction, etc., to which most of the philosophy of the mind has been devoted, are derived from the original intuitive trunk of the intellect and are therefore, biologically speaking, comparatively modern.

The record made in my diary of the reading of this paper and its discussion is as follows:

"I read my paper (The Biological Basis of Psychology) and it was listened to with attention. Dr. Reyburn started the discussion, taking the off side . . . Riley, Dall, Fernow, McGee, and Bigelow took part and I answered their questions. Professor Dall's remarks were excellent. Mr. McGee was very complimentary. Dr. Merriam from the chair expressed the thanks of the Society, and indulged in some most extravagant expressions, calling me the Darwin of America!"

The Manhattan Liberal Club of New York had long been wanting me to come and give them a paper. I had some official work that required me to go to Baltimore, Princeton, and New York, and I wrote to Dr. E. B. Foote that I could be there on March 24, but at no other date, and that if that would suit I would read a paper on *The Two Trunk Lines of Psychic Development*. The program for March was already made up and the card issued. A Mr. Henry Rowley was to speak on the 24th

on *Religion and Morals*, but he cheerfully postponed his paper. I was there and read my paper, putting a diagram on the black-board. The two trunk lines were of course, the feelings and the intellect, but I laid special stress on the two kinds of intuition, intuitive reason and intuitive judgment, characterizing them as male and female.

After my remarks on Professor Le Conte's paper before the Philosophical Society of Washington I was requested to read a paper on the subject before that Society, and on February 15, I gave the Secretary the title: *The New Psychology and What it Promises*. There were other papers ahead of it and it was not reached till March 26. The paper consisted of a condensation of Chapters I-XXIX of the book, but, as in the case of the one read before the Biological Society, there was a preliminary and also a concluding portion written specially for the occasion, and these may be introduced here:

[Preliminary portion.]

It has occurred to me since handing in the title of my paper that I should have used the indefinite instead of the definite article as the first word of that title, since otherwise it seems to imply that such a psychology as I shall outline actually exists, which can scarcely be said to be the case, although the foundations for it have long been laid and the tendency of the times is now stronger than ever in that direction.

At a meeting of the Biological Society in this hall a week ago I undertook to show that psychology rests on a biological basis, that mind came into existence in obedience to the fundamental laws of the organic world, and that psychic phenomena are the direct result of vital phenomena. The principal propositions that I sought to establish in that paper were: (1) that mind consists of two very different classes of phenomena, feeling and thought, or sense and intellect; (2) that feeling constitutes the subjective and thought the objective side of mind, justifying a classification of the science of mind into subjective and objective psychology; (3) that feeling viewed from the biological standpoint is made up of pleasure and pain; (4) that pleasure and pain are the conditions to the existence of plastic organisms and came into existence under the law of the survival of the fittest to secure the protection, nutrition, and perpetuation of such organisms in the absence of any other means to these ends; (5) that the effective form of feeling through which this was accomplished was animal desire in its broadest sense including the appetites, passions, impulses, and propensities of all kinds, negative as well as positive; (6) that these desires or appetitive attributes constitute psychic forces, which reacting upon the organism and the environment, led to their further development; (7) that the origin of this subjective department of mind was long anterior to that of the objective department, the intellect, or faculty of thought, this latter being a comparatively late graft upon the original psychic trunk, sense or sentiency; (8) that the intellect was developed out of the feelings at the point where the original psychic force, desire, acting like other natural forces in a straight line toward the attracting or from the repelling object proved inadequate longer to secure the increasing demands of existence; (9) that just as feeling is a purely propelling agent, so intellect is a purely directing agent; (10) that the primary form of intellect is that of intuition; (11) that intuition had a natural development from animal experience, from failure to secure the satisfaction of desire on account of the obstacles presented by the environment; (12) that this probably first resulted from accidental successes attending fortuitous explorations, and gradually developed the faculty of pursuing indirect paths to the

objects of desire when direct paths were impossible; (13) that through the operation of the law of natural selection this faculty became so strengthened that with the aid of instincts certain of the better organized animals habitually employ the indirect method where it is the only one by which their desires can be satisfied; (14) that this primitive intuition is the true initial form of the intellectual faculty; (15) that it consists essentially in a perception of relations, chiefly those of direction, resistance, velocity, distance, and position.

On the present occasion to avoid repetition I will assume these several points to be established, and will address myself more especially to the less strictly biological aspects of this new psychology and to the advantages which it possesses over the old. Turning for a while to the subjective department it will be seen that it was scarcely recognized by the old philosophers. Spinoza, indeed, classified and defined the passions, and Kant admitted that mind consisted of two elements which he called by names that may be translated sense and intellect, but he failed utterly to develop the first of these subjects, and it may be said without great risk of error that up to this date there exists no treatise on the feelings conceived as a part of mind. Yet it is this that gives to psychology its scientific basis, for it is in this subjective department that the psychic forces reside, and here alone are they to be found.

[Concluding portion.]

The new psychology therefore, in recognizing the dynamic principle of mind certainly promises to take rank as a true science, which the old psychology never could do for want of such a principle. I confine my remarks on the subjective side of mind to this single point, first, because it is the essential one to be emphasized, and second, because, being thus quickly disposed of, more time is left to consider the objective side of mind from the new standpoint. Passing over mere animal intuition which constitutes the first step in the development of intellect proper, a more advanced stage is soon met with which, for the sake of a name, may be called intuitive perception. . . .

[All the steps treated in Part II, were here passed in review.]

I have now followed the great objective branch of mind to a point where it has fairly freed itself from the trammels of the will, or rather, where the impelling desire has become an exclusively intellectual one. I might go on and show how, from inventive genius, which underlies the useful arts was developed creative genius, which underlies the fine arts. I might also show that under the new spur of intellectual desire there ultimately arose the speculative genius of man, culminating in reflection and abstract reasoning, giving birth to mathematics and logic, and leading to the broad generalizations of philosophy, all totally free from the biologic law of advantage, and perfectly useless in the struggle for existence. But time admonishes that I must not go further with this fertile theme, and I will leave the rest to be inferred. It is only essential to point out that in this mode of viewing the intellectual faculty we have not only a wide departure from the current way of treating it, but we have a psychology that can be made useful. I have been led to these inquiries by a desire to discover a sound scientific basis for the phenomena of social life. It has been argued by Froude and others that no such basis exists. Comte and especially Spencer have sought to make sociology rest upon a biological basis. In this they have merely put the political economy of Ricardo and Malthus into a scientific form. They have ignored the psychic factor which chiefly distinguishes man from animals. In the paper which I read a week ago, I sought to show that psychology does indeed rest on a biological basis. In the present paper I have merely outlined the argument which, if completed, would show that sociology rests on a psychological basis. This is the natural deduction from a recognition of the true order of succession of the sciences, but in Comte's "hierarchy" he intentionally ignored psychology and called it transcendental biology, while Spencer, although he fully recognized

psychology, failed to connect it with sociology. Indeed he failed to work out the true biological development of the mind, ignored both the genesis and the true function of the inventive faculty as the primary trunk of the intellect, and therefore failed to discover the real basis upon which social progress and civilization rest.

The two things, therefore, which the new psychology promises are first, a dynamic principle or psychic force which alone can make it a science, and second, a directive principle which, applied to that and other forces, affords an explanation of human achievement in the past and the "promise and potency" of its unlimited increase in the future.

The paper was discussed by Major Powell, Dr. Harris, and Professor Riley, but the mode of treating the subject was so wholly unexpected that nothing of importance was elicited by any of the speakers.

My diary for July 17, 1892, contains the following entry:

"I made a small beginning on an article which I may read at the Section [Section I of the A. A. A. S., of which I was Secretary] or the Am. Econ. Assoc., on The Psychologic Basis of Social Economics. With some adaptation it will do for a chapter in the book."

(For the complete account of this paper see *supra*, Vol. IV, No. 331.) I returned from those meetings on August 28, and on September 3, I commenced the systematic revision of the book. On that day I wrote the new title page with the changed title. Part I was finished on the 7th, and Part II on the 10th. It was then that I condensed the two chapters called respectively *Knowledge and Intelligence* and *Intellection*, into one, and called it *The Intellect*, which concludes Part II. The preliminary discussion in that chapter was also written at that time. The revision of Part III was begun on September 15, and the first thing to be done was to rewrite and expand my Rochester address to be inserted as the first chapter in that part, viz., Chapter XXXIII. The name was then changed to *The Economy of Nature and the Economy of Mind*. It was finished on the 25th, and increased from 69 to 120 folios. I had been obliged to do all this from the rough draft, as the final draft was out of my hands. On the 27th I completed the revision of the book, which then consisted of only thirty-seven chapters.

On October 11, I commenced work on what I called "embellishing" the book, *i.e.*, introducing apt quotations, short epigrams and mottoes, etc., over the several heads. First of all, I wished to connect this work closely and organically with *Dynamic Sociology*, and to this end I selected a large number of passages from that work to be placed at the heads of the chapters, showing that I had there foreshadowed more or less clearly most of the ideas of the new book. For the other classes of passages my *Index Rerum* was my main dependence, and by means of it I had by October 21, found appropriate passages for nearly all of the chapters. On the 26th I commenced copying these passages

out of the books in my library on sheets uniform with the manuscript and assigning each to its appropriate chapter. This work was done on November 13, but many of the quotations required to be verified, being taken from other than the original sources. On the 14th, therefore, I commenced my researches in the libraries, and primarily in the Library of Congress. It was a prolonged labor and was not completed until November 30. I found it difficult at times to find the exact place for some of these quotations, and I saw that an analytical table of contents would help me in this matter. This had to be made anyhow, and on December 1, I proceeded to make it. On the 13th it was completed as far as the book was written, but I had then decided to add a chapter on *Sociocracy*, and it was commenced on that day. It was finished on the 16th, and the analytical table of contents was made to include it. The assignment of these "preludes" to their appropriate chapters was the next task, and this was indicated on the folios in red ink. This and kindred work was completed on December 24, and the same evening I commenced writing the preface, which I finished December 25. Certain small matters occupied me till the next day, when I struck the last blow, and pronounced the book done. It had, therefore, required a year lacking five days to write it, and it was entirely the work of the year 1892.

During the holiday week of 1892-3 I had as my guest Professor William B. Owen of Lafayette College, Easton, Pennsylvania, the well-known classical and Anglo-Saxon scholar (associated with Professor March) whose sister was the wife of my brother Osborne. Dr. Ross, whose marriage to Miss Rosamond Simons, niece of Mrs. Ward, took place on June 16, 1892, was also in Washington and much at our house. Both of these gentlemen were fully cognizant of my work, and I was much beholden to them both for many valuable suggestions. As the book was now written and the manuscript still in my hands, it occurred to me that it would be an appropriate occasion to accomplish the double object of enabling some of my personal friends in Washington to meet Dr. Ross and Professor Owen, and of explaining to such a gathering the character of my work. New Year's Day, 1893, as in the present year (1911), was Sunday, and I had sent out invitations on Friday and Saturday to a goodly number to come at 11 A.M. of New Year's Day. Most of those invited came. Besides Dr. Ross, those who came were: Dr. Frank Baker, Major Powell, Mr. Edward T. Peters, Col. Henry F. Blount, and Dr. George Emory Fellows, a friend of Dr. Ross's, who happened to be in Washington at the time. Dr. Harris was invited, but had a previous engagement. They demanded an account of my book, the manuscript of which made a huge pile on the center table. I told them the history, object, and general nature of it, and read them the preface, the titles of

the parts and chapters, pausing briefly to explain certain points. There was some discussion on special heads as I proceeded, but most of that came later. They demanded the reading of Chapter VII, *The Origin and Function of Pleasure and Pain*, and I asked Dr. Ross to read it. Most of them stayed to luncheon at one o'clock and continued the discussion till three. The subject of publication came up, and the firm of Ginn & Co., Boston, was highly spoken of. All seemed highly pleased, and the affair was a great inspiration to me after my prolonged labors.

Nothing was said on New Year's Day about a dedication of the book, but I had thought considerably on the subject. There was no person to whom I was specially indebted, as I had evolved the entire scheme myself. But the year 1892, in which the book was written, was the quadricentennial of the discovery of America, and I had thought of dedicating it to America. I find three drafts of such a dedication among my miscellaneous papers. One of these reads as follows:

"This book, written wholly within the quadricentennial year, and published in the year of the great American Exposition, I dedicate to America, the experimental ground of civilization."

The other two, by the introduction of certain erasures and interlineations, are practically brought to one, which is as follows:

"To America, the experimental ground of civilization, this book, written wholly within the quadricentennial year of its discovery and published [issued] in that of the great Columbian Exposition, is dedicated, and consecrated to the cause of social progress and mental enlightenment on American soil."

That this proposed dedication was written at about the time that I explained the book to the company is evidenced by the fact that over one of the copies the word "Dedication" is written in Dr. Ross's handwriting. There is also a record in my diary for January 2, 1893, that I mentioned it to Dr. Baker and he approved of it. But for some reason, or, more probably, for several reasons, it was never made a part of the manuscript, and the book is without a dedication.

The paragraph on *physiocracy*, beginning on page 318 and ending on page 319, including the footnote, was written on January 5, 1893, and interpolated in the manuscript. Other revisions were made from time to time as long as the manuscript remained in my hands.

The finding of a publisher was a simple matter. I wrote to Ginn & Co. on January 2, mentioning Dr. Baker and Professor Owen, whom they knew, and I think they both also wrote to them urging them to accept it. Ginn & Co. replied on the

7th. I learned that Professor Owen had written to Mr. G. A. Plimpton, their New York agent. On the 16th I received a letter from them referring to letters received from Dr. Ross and Professor Owen, and intimating that they were willing to undertake the publication, even mentioning terms. Thereupon I packed up the manuscript and sent it on to them by express. On the 30th I sent them a letter from Dr. Small expressing great interest in the book. The agreement was received and signed on February 3, and publication was assured.

There was a month's delay, and on March 6, sample pages were received and before the end of that month all questions as to page, type, etc., were settled, and the composition had begun in earnest. It had been my practice in the manuscript to append pretty full references to the "preludes," but on seeing them thus in type, this seemed a blemish, and on March 31, I decided to cut down the references to a minimum and introduce a bibliography at the end of the book that should give full details and in some cases critical discussions. I wrote the publishers to that effect, and on April 6, I received from them most of the manuscript from which to prepare the bibliography. The work was fairly commenced on April 9, and was finished on June 19, on which date I mailed the manuscript.

Final page proof from the stereotyped plates began to come on April 8, and I commenced preparing a slip index from them on April 9. This work went on as the pages arrived. The last of these final proofs came on June 15, and the slip index was completed June 22. It was then reduced to manuscript form, and finished on June 25. The manuscript was sent to the publishers on June 27, by express.

I made quite a lecturing tour April 23 to 28, 1893, to Rochester, Ithaca, and Philadelphia, (see *infra*, Nos. 355, 376), during which I twice read the chapter on *Sociocracy* (Chapter XXXVIII). The first was on the 26th at Cornell University, where I read it before the Historical and Political Science Society. The title was announced as *Plutocracy and Sociocracy*, but I think I did little more than read the chapter with a few comments. Dr. Ross was then at Cornell, and he introduced me by reading a letter I had recently received from Dr. Andrew D. White. That was calculated to make me solid with my audience. The other time was on April 28, at Philadelphia. I had stayed over night after my address of the previous evening, in order to make some bibliographical researches at the University, and I went over these in the morning. There I met Professor J. Q. Adams, who assisted me in the library. He was to lecture to his class of seniors at twelve o'clock, and he asked me if I would take his hour and talk to the class, as he said, on any subject I pleased. I could not have done so without preparation, but it happened that some of the points I had been looking up in the library were

in that chapter, and I had the manuscript with me. I told him I might read that, and he said it would be highly appropriate. I did so, and it was my first lecture to a class of students. I made the following record of it the same evening:

"It was a most interesting affair. There were some twenty-five bright, wide-awake fellows, disposed to cheer all the good points. At the close Professor Adams asked me if I would object to have the students ask questions, and they commenced and catechized me right and left, and in a most interesting and intelligent manner."

The footnote on pages 254 and 255 relative to the use of clubs and tools by apes and other animals was written on May 24, 1893. Mr. J. Ormond Wilson, then of the Colonization Society, who had read my address, informed me that Büttikfer stated in his *Journeys in Liberia* that the chimpanzee used clubs. I went that day to his office and borrowed the book and took it home and hunted up the passages. These I put into the footnote. It is an excellent example of how such ideas get abroad. Mr. Wilson had evidently read the book, but the idea he gathered was simply a false inference. The matter relating to Humboldt's pessimism on pages 63, 64, and 339 was rewritten on July 9, 1893, in the light of the letter I had received from Hartmann on the 6th. I easily found the passages in the copy of the *Memoiren* in the Library of Congress. It was Mr. Simon Wolf who had so strongly denied the accuracy of Mainländer's reference. He had shown it to Mr. Theodore Poesche, who is the one that declared it a "stupid forgery." There were a few other corrections to be made and the bibliography had to be indexed. This was all done in July, and on July 22, the last proof of the book was received. On October 3, Ginn & Co., wrote me that the book was in press, and on the 26th two unbound copies were received. On the 30th I received the bound copies I had arranged for.

The publishers were liberal in distributing the book in this country, and Mr. George Iles generously provided for sending copies to a number of his friends. I prepared quite a list of foreign correspondents and the publishers reduced the price on these. Many acknowledgments were received, a few of which went to the merits. Dr. David J. Hill, who was still President of the University of Rochester, not only acknowledged it as soon as received, but wrote again on December 19, 1893, after having read it. He also reviewed it in the *New World*, and to this I shall presently refer. Professor Patten, who, as is well known, did not in those days sympathize with the sociologists, still wrote what he called (in a letter dated April 20, 1894) a review of the book, but it was not such, it was an article entitled *The Failure of Biological Sociology*, in which the book was barely referred to, and in which he classed me along with the biological

sociologists, showing a complete "failure" to understand either them or me. Under correspondence I should mention that with Dr. Swan M. Burnett, in which he pointed out the error in the last line of the stanza quoted on page 44 from Bourdillon's poem, *Light*, where the words "the day" are substituted for the word "love" in the original. I quoted it correctly from the only source I had, as given in full in the bibliography on page 334, but that source was not reliable. In the *New York Critic* for June 30, 1894, pp. 443, 444 (Vol. XXI) is an article by R. L. C. White of Nashville, Tenn., entitled, *A Curious Misquotation*, in which he shows that Bourdillon wrote "love," and not "the day." The error is corrected in the second impression, 1901.

Herbert Spencer's letter, dated November 13, 1893, is little more than an apology for not being able on account of ill health to read the book.

Turning to the reviews, of which there was a great number and many able ones, I may first mention that of Mr. Edward T. Peters in *Public Opinion* for November 9, 1893. It is not signed, but I stamped his name at the end of it in a number of copies that I distributed. He had had a complete page proof for some time before the book appeared, and had informed me of his intention to review it very early, as, indeed, he did do. But I also furnished him with a sketch of the chief points of the work, and he used them very freely, so that the article is probably as much in my language as in his. Still I never laid any claim to it.

The able review in the *New York Times* for January 7, 1894, is from the pen of my friend, Dr. Owen, whose frequent visits to me and interest in my writings have been mentioned in these sketches.

President Hill's review, above mentioned, appeared in the *New World* (Boston) for June, 1894 (Vol. III, pp. 393-396), and, while it is to some extent expository, is mainly an appreciation of the argument of the book, which he fully grasped and keenly analyzed. He calls special attention to Chapter XXXIII, *The Economy of Nature and the Economy of Mind*, which is the expanded address to which he listened in August, 1892.

Dr. Paul Carus reviewed the book at considerable length in the *Monist* (Vol. IV, July, 1894, pp. 621-625). It is a friendly criticism, but fails to grasp the leading ideas. It has the common vice of most attempts to discuss fine psychological questions, viz., that of confusion, the effort to show that there are no clearly marked distinctions in psychology.

Undoubtedly the ablest review that appeared was that of Professor John Dewey in the *Psychological Review* for July, 1894 (Vol. I, pp. 400-408). I do not say this merely because it is so largely favorable. It is also critical. As a professional psychologist, acquainted with all the technical phraseology, the

fine-spun theories, and the favorite "jargon" of modern psychology, there was much in my direct way of getting at things that seemed to him naïve and doubtless jarred upon his sensitive professional nerves, and he often points out such, to him, crudities, and even finds some contradictions, though here he several times quotes as mine the views of Schopenhauer, which I am rather trying to refute than defending as my own. But Professor Dewey was broad enough not to be repelled by these defects, and he saw that the book was talking about something. He freely admits that the psychologist will get more from it than the sociologist will from psychology.

It is amusing to compare this review with Dr. Patten's article. It shows that the book is a complete refutation of the biological sociology, and places sociology squarely on a psychologic basis. I cannot give space to many of the strong features of Professor Dewey's treatment. I need only say that it is far more penetrating than any of the other reviews. For example, he clearly perceives the process by which the mind is shown to be of biologic origin. He not only sees that feeling was a biologically advantageous faculty, but he even follows me some distance in showing that the directive faculty was primarily advantageous, and subsequently evolved into those higher intellectual powers that are usually regarded as alone constituting the intellect of man. He is particularly struck by my distinction between intuitive reason and intuitive judgment, and lays much more stress than I do on the former representing the male and the latter the female method of thinking.

Professor Dewey is also in full sympathy with the argument of Part III, and clearly sees how the psychologic treatment of social and economic questions reverses the old method and opens up new vistas in all the sciences. He even admits and says that "the current theory of mind undoubtedly needs reconstruction from the sociological standpoint."

On February 17, 1896, I received from an unknown source a copy of the Russian magazine called *Russian Wealth* for December, 1895, containing a sixteen-page review of this book, signed "N. J." I proceeded at once to read it and finished it on March 26. The print is well leaded and I wrote in with a fine-pointed pencil the English translation of great numbers of the words. The review is fairly able, and was of course made from the English edition, as the first Russian translation did not appear for a year from that date. I learned who the reviewer was from Miss Antonoff (see below), who informed me that his name was Nikolas M. Jordansky.

On September 29, 1894, I received a letter from Dr. Theodor Sigel (see *Dynamic Sociology*, preface to second edition, p. xviii) in which he stated that a Russian lady of his acquaintance was going to translate *The Psychic Factors of Civilization* into Russian,

and he asked me to send her a copy of it in his care, which I did. The lady was Miss Alexandrovna Antonoff. She acknowledged receiving it in a letter dated December 22, and thought her translation might appear in some Russian magazine. On February 13, 1896, she wrote me that the translation was finished. For some reason she did not take steps to get it published that spring, and went into the country for the summer, apparently letting the manuscript lie. On September 20, 1896, she wrote again saying:

"*The Psychic Factors of Civilization* will be published in October and as soon as it appears you will have it. As it will be published in one volume of twenty sheets, it will not be censored before printing and as the censors are less severe to printed matter, there is much hope that the work will get through without any difficulty. But the translation will not be mine. I was too late! Another lady, Mrs. Baranowsky, translated your book also and made arrangements with a publisher, Pavlenkoff, before I was ready. But do not think I consider my time lost. Translating was such interesting work. I got so much absorbed in the gradual development of your idea that I really consider the hours I passed with *The Psychic Factors* as the most useful and interesting I have ever spent."

It was in this letter that she mentions the review of the book by Jordansky, referred to above. True to her promise, Miss Antonoff sent me the Russian translation, which I received on December 1, 1896, but instead of the translator's name being Baranowsky, it was L. K. Davidoff. I wrote her a letter, mentioning this fact and she replied that Davidoff was Mrs. Baranowsky's maiden name. Ten days later I received another copy of the Russian translation, duly inscribed by Lydie Davidoff.

In the preface to the second edition of *Dynamic Sociology*, pp. xxii, xxiii, I mentioned this and three other translations, one of which three certainly appeared, and will now be considered. On page xxii of that preface I also mentioned the translation of Chapter I of *Dynamic Sociology* as one of a series of articles on Auguste Comte, published by a house in Moscow. This concerns us here only from the fact that on the cover of that pamphlet was an announcement of a Russian translation of the *Psychic Factors*. I received this work from Mr. Lessevitch on November 24, 1896, and on December 5, I wrote to those Moscow publishers (Knizhnoe Dyelo) to send me that translation. It arrived on January 9, 1897. The translator proved to be Miss E. I. Boshniak, and the translation is much more complete than the St. Petersburg edition. In that the censors had been at work. The *Introduction* and the quotations from *Dynamic Sociology* had all been expunged and the work was otherwise greatly reduced and mangled. In this all this stands. The bibliography and index, as in most translations, are omitted, but the titles of my own works from the bibliography are introduced at the beginning of the volume. The name of this Moscow translator did not

indicate the sex, but on April 30, 1897, I received a letter from her. She wanted to translate other works, preferably mine, and the result was her translation of my *Outlines of Sociology*. I subsequently (1903) met Miss Boshniak in Paris. During the year 1897 I read both these Russian translations conjointly, comparing them carefully with the English, which I used as a "pony." By that time I had acquired considerable facility in reading Russian, which I commenced to study on January 20, 1895. The Russians were so deeply interested in my ideas that I was constantly receiving articles about them in Russian. Nikolaeff, before translating *Dynamic Sociology*, had written an elaborate review of it which Mr. Lessevitch had sent me, and that was the first thing I read in Russian. Reviews of my books, and especially translations of them, were the easiest kind of Russian, but I have since read a good many articles on other subjects, including Michailovsky's *Heroes and the Crowd*, in which he anticipates much of Tarde's philosophy of imitation.

On May 24, 1901, the publishers sent me a notice that a new impression of the book would have to be made, and asked if I wished to make any corrections. I was in Arizona at the time and could do nothing about it till I returned, which was not till the end of June. I then sent on all the corrections of errors I had detected since the work appeared. Proof was read of the same on July 8 and 9, and the second impression appeared on September 30. They had changed the date on the title page to 1901, which irritated me greatly.

On March 30, 1905, Mrs. Unger informed me that she had commenced translating *The Psychic Factors* into German. She had finished Part I early in October of that year. Here she suspended work upon it and has not up to this date (April, 1911) resumed it. Probably she will not do so, as there seems to be no demand for my books in Germany.¹

On February 5, 1906, the publishers notified me that a third impression of the book would soon be necessary. I sent on one plate correction that day, and suggested that the new impression be called the second edition. I did not want them to change the date again without something to show that it was not the original date. On February 10, they asked me to send a preface to the second edition, which I did immediately, giving it that date. Proof of it was received February 19, and of all the preliminary pages on March 2. It appeared about the first of July, simultaneously with my *Applied Sociology*, published by the same house, but I was abroad at the time and did not receive a copy until July 16.

¹ [Ed. note—Since the death of the author Mrs. Unger has applied for and has been given the right to translate into German one or all of Dr. Ward's books.]

On April 15, 1907, I received a letter from M. G. Papens in Gand, proposing to translate this book, and also *Dynamic Sociology* into French. He seemed fully in earnest in the matter, and after some further correspondence, on May 15, I ordered the publishers to send him a copy of the second edition. On June 5, I received from him an acknowledgment of the receipt of the book. When I had reached this point in writing this sketch I wrote to him on December 10, 1910, at his former address in Gand, but the letter was returned to me by the Post Office authorities. He had a summer address in Spa, but before writing there I inquired of Dr. De Greef as to his whereabouts. He informed me that he resided permanently at Spa, and I then addressed him there, but with the same result, the letter being returned unclaimed.

On December 2, 1908, I received a letter from Pedro A. Martin Robles, dated from Madrid, November 20, saying that with the consent of Professor Posada he had undertaken the translation of *The Psychic Factors of Civilization* into Spanish, and hoping that I would not withhold my approval. It seems that at that date he had already made considerable progress with the work. I of course gave my consent and wished him all success. In March, 1910, Mr. Robert of Barcelona informed me that it was out. I had not received it, and had almost forgotten the circumstances, so I wrote to Robert for particulars. He made no reply, but on October 3, 1910, a copy of the translation of Robles reached me. It makes a thick volume of 402 pages, and seems to be an excellent piece of work. I have read considerable of it and intend to read it all and carefully compare the English.

I wrote to Robles thanking for the copy and congratulating him on its appearance. I suggested that if he translated other of my works he transpose my first name and middle initial, which were wrongly printed on the title page.

November, 1893—Ætat. 52.

350. Early Education and Precocity

History.—Written February 26–28, 1893. I must have written this article from impulse. Many of my articles have been so written. A big idea strikes me and grows till I can contain it no longer, and I sit down and give expression to it while it is uppermost in consciousness. I had not heard from Florence Hull for some time but supposed *Childhood* was still alive, and thinking the article suitable to that journal I sent it on. I never rewrote it or copied it, and, as I saw neither proof nor copy, I have no manuscript of it. I sent it as soon as written, and on March 2, she wrote me a most eulogistic letter, saying she wished she could fill *Childhood* with its like.

I heard nothing further from it for more than a year, and on May 30, 1894, happening to think of it, I wrote to Florence Hull about it. She replied on June 9, and informed me that *Childhood* had been obliged to suspend with the number for February, 1894, but that my article appeared in the issue for November, 1893. Later she sent me a large number of copies of that issue.

It was probably my reference to nature study that prompted Florence Hull to ask me in her letter of June 12, 1894, to come to the Long Island Chautauqua at Point o' Woods, Great South Beach, Long Island, near the Fire Island Light, and address the Assembly on that subject. Dr. Winterburn was the Sanitary Inspector, and she informed me confidentially that she and the doctor were married. I gave the talk on July 25, 1894, on my way to Europe, taking for my subject *Nature Study at First Hand*. I spoke from slip notes which I have preserved. It was a very pleasant affair.

The reader will probably infer that this article reflects to a large extent my own personal experience and history. The last

paragraph but one is simply a description of my boyhood, the ideas I then had about "an education," and those that my subsequent scientific career forced upon me.

Childhood. *The Magazine for Parents, devoted to the Welfare of the Child.*
New York, Vol. II, No. 6, November, 1893, pp. 392-394.

THE real danger that a people incurs is not that of falling under the dominion of this or that political party or this or that national control; it is that of becoming mentally and morally effete. An effete race is one that devotes itself to superficial instead of fundamental things. A mark of effeteness is the more or less exclusive attention to artificial or derivative subjects, and the neglect of natural and original subjects. Life in cities, generation after generation, fosters this habit, and it is of the utmost importance to an urban population that this be counteracted in every possible way. The parallel between the child and the savage, though trite, is true, and it has its good as well as its bad side. One of the strongest proofs that our modern artificial civilization is derived from an ancient natural state of existence is found in the fact that almost all children, even those whose parents, grandparents, and earlier ancestors, as far back as they can be traced, have always lived in cities, manifest a lively interest in everything natural. Animals, birds, insects, flowers, trees, rocks, hills, streams, lakes, ocean, all awaken in their young minds the long slumbering emotions that have never been wholly quenched since the day when their uncivilized ancestors were dependent upon these objects for the very means of existence.

But far removed as most men now seem to be from all such things, the whole complex fabric of modern life still rests primarily upon "the solid ground of Nature," and rightly viewed the most important things with which the mind can deal are those of the great free world in its primitive nakedness before the transforming hand of man has altered them for better or for worse. Just as thought rests primarily on sense impressions from the real external world, and grows more and more unsafe and unworthy as it is removed from this firm base by the operation of complicating brain-processes, so activity was originally in connection with man's immediate material environment, and becomes trivial and untrustworthy in proportion as it drifts away from this solid foundation and expends itself upon the derivative and superficial products of our complex social life.

The lesson that all this teaches is that it is the supreme duty of society to maintain a free and constant connection between the

upper and the lower strata, between art and nature, between city and country, between the house and the field, between books and natural objects. There is no greater mistake that parents make than to suppose that the degree of precocity evinced by their children in learning their lessons at school is an index to their future abilities or usefulness. It is a pity that the kindergarten system cannot be so perfected that all lesson learning from books before the age of ten or twelve will be done away with. The less "training" of any kind during this period the better. This is the *receptive* stage of the mind. Education should consist in placing the child in such situations that the things which it is most important that it should know will be constantly appealing to the senses. These can be trusted to preserve that knowledge. It is such impressions, whatever they may be, that are to constitute the basis of all future ideas, opinions, and actions. Conduct is to be squared by them, and character, if not formed, at least guided. The great desideratum therefore is that these impressions be fundamental and original, and not superficial and derivative. A book is a highly derivative object. It has taken ages of thought and a series of inventions to evolve the book. It is, indeed, the highest and grandest achievement of the human mind, and is not to be decried or condemned as the school of Rousseau would do. But as the product of mature thought it is adapted to mature minds, minds that can perceive that it is only a medium of communication between man and nature. The child cannot do this, and the book should therefore only be brought forward in education in proportion as the mind gains strength to comprehend its true purpose. The great bulk of the education of the child should consist in bringing him into direct contact with nature. In cities where this is most needed nothing is more difficult. Except when he turns his face upward and beholds the blue sky, the fleeting clouds, the blazing sun, or the starry firmament of night, all he can see is the work of man. Houses of brick and stone, paved streets, stores filled with highly wrought goods, carriages and public conveyances, domestic animals and people—these fill out the entire picture and make up his world. Unless something is done to vary this scene, all other knowledge must come from books or oral instruction. A child thus educated, however precocious, has no foundation for a life of usefulness. He is turned out helpless before the stern realities that in most cases await him. A continuation of this state of things brings quick degeneracy and intellectual decay. Indeed, we have little idea how far it may have already gone in our larger American cities, but it is notorious that the intellectual life of cities is being constantly sustained by a steady influx of the best blood from the surrounding country, and the biographers of great men almost invariably chronicle their early experience as farmers' boys, country school teachers, etc., before

they were impelled by their native superiority to seek in cities a broader field for its later exercise.

There is no greater need of the present age than what may be called the *ruralization of city populations*, and this should begin with child-life. Every opportunity should be seized to enable children to pass as large a part of their time in the country as possible, and least of all should this time be begrudged because taken from school life. It is worth infinitely more, and in the long run it really makes little difference that one, two, or even five years of the latter be lost, and the child be that much behind those children who are confined during these same years to the acquisition of mere book knowledge. As a substitute for this actually turning loose of children to learn the lessons of nature, since in most cases this will be considered impossible, the educational system of cities should aim to avail themselves of all the opportunities that exist—parks, suburban resorts, etc.—and as often as possible, all little inquirers should be furnished the means of letting their feet touch the ground and their eyes feast upon as large a part of the real world as they can obtain access to. All healthy out-of-door sports should be encouraged and made as much a part of the child's education as are his regular lessons. A complete system of reform education along this line might be devised, and doubtless would be devised by educators could they be brought to recognize its overshadowing importance.

All agree that permanent progress is made possible only through science, but science is simply a knowledge of nature. The great philosopher, Auguste Comte, pointed out that science progresses by two principal methods, observation and experimentation. The former has preceded the latter historically; it should precede it in the life of the individual. The early ages of man's existence were devoted to observation; the era of experimental science scarcely dates back a century. As with the youth of the race, so should it be with the youth of the individual—a period of observation, the laying of a broad foundation for the mature and systematic elaboration of the materials thus permanently stored away in the plastic and retentive brain of the impressionable child.

The country boy, roaming through fields and forests, climbing rocks and mountains, gathering wild flowers, fruits and nuts, and picking berries, chasing birds and butterflies, catching fish, killing snakes, and later hunting the smaller game, perhaps rowing and sailing; or, as in most cases, besides these, watching sheep, hunting cows, riding horses, and planting corn—such a boy little dreams that he is all this time acquiring scientific knowledge of the most useful kind, and he is apt to imagine a little later, when he begins to feel the need of "an education," that all the time thus spent has gone to waste. But if he presses

on, and at last gets that education and enters any of the great avenues of science that are open to bright young men, he will come at length to see that those rustic days were the richest of his life, and that it is to them that he owes the breadth and volume of his subsequently developed nature. Should he perchance be called upon to measure swords with purely city-bred companions this truth would come forth with startling clearness.

This much neglected point of view is one for parents and educators, nay, even for legislators and social reformers, to consider. Something must be done to enrich the lifeless and attenuated atmosphere of the more populous centers. An unconscious sense of the situation has created the modern fashions of "outing," "wheeling," national games and recreations from business, but these only tend to relieve the strain upon adult life, leaving the foundations of the evil untouched. The remedy must be applied earlier and the mental and physical constitution of the race must be given that touch of nature which makes the whole world kin by teaching all, the high as well as the low, that they are the children of Earth, the common Mother of all that lives and feels and thinks.

November 15, 1893—Ætat. 52.

351. [Third Announcement of The Psychic Factors of Civilization]

History.—Written February 14, 1893. This was sent with the first preliminary announcement, but was reserved to be distributed after the book should appear. I received copies on November 15, 1893, the book having appeared at the end of October. Dr. Ross's appreciation of the book, placed at the head of the second circular, also stands over this one.

Professor EDWARD A. ROSS, *Leland Stanford Junior University*: I have the highest opinion of its merit and value. It is a profound and original book that touches matters of earnest discussion at the present time.

THE PSYCHIC FACTORS OF CIVILIZATION.

By LESTER F. WARD.

AUTHOR OF "Dynamic Sociology."

8vo. Cloth. xxi+369 pages. By mail, postpaid, \$2.00.

This work is an original contribution to both psychology and sociology, and is, in fact, a combination of these two departments of science. It is the first attempt that has been made to show in a systematic and fundamental way the workings of mind in social phenomena. It has hitherto been customary with those who recognize the operations of law in human affairs to compare them with those taking place under the dominion of vital forces. Sociology has been made a department of biology. Society has been treated as a living organism, and the laws of production, distribution, and consumption have been likened to the processes of nutrition, circulation, and assimilation. Political economy has thus gained the name of "the dismal science" because it has been treated as mindless and soulless. Over against this purely *physiological* economy we now have fully set forth in this book a *psychological* economy, a philosophy of mind as the primary motive power of the world in all things above the level of animal life.

The work is divided into three parts:

1. The subjective factors;
2. The objective factors;
3. The social synthesis of the factors.

The first part is devoted to showing that the true forces of society are psychic, and make up the subjective side of mind, viz., *feeling*. The second part demonstrates that the directive agent which controls the social forces is psychic, and constitutes the objective side of mind, viz., *thought*. The third part points out how the social forces under the control of the directive agent have established society, raised it step by step to its present state, and are carrying it forward to its ultimate destiny.

The work appeals especially to the following classes of readers:

1. **Psychologists** and special students of mind in all its departments.
2. **Sociologists** and students of social science from whatever standpoint.
3. **Economists**, the general students of the conditions of wealth and laws of trade and industry as well as the special students of the relations of the state to industrial action.
4. **Philosophers** and **thinkers** who are interested in the broader problems of cosmology and evolution.
5. **Biologists** and **naturalists** who are familiar with the facts of animal and vegetable life.
6. **Social and political reformers, socialists, nationalists, populists**, and the thoughtful working-people of all trades and occupations.

All of these great fields are fearlessly entered by the author of this volume with the confidence that comes of long familiarity with his entire subject. The scholars embraced under the first five of the above classes will all derive fresh inspiration and gain new light from the novel presentation of many topics in their respective fields. The earnest and honest thousands embraced in the sixth and last class will learn that political economy and social science, correctly understood, are not the enemies but the friends of true reform.

December, 1893 (?)—Ætat. 52.

352. Administrative Report for the year ending June 30, 1891

History.—Written June 17–22, 1891. .

Twelfth Annual Report of the U. S. Geological Survey, 1890–'91, Part I,
Washington, 1891 [appeared in 1893], pp. 120–125.

January (?), 1894—Ætat. 52.

353. Report on the Department of Fossil Plants in the U. S. National Museum [for the year ending June 30], 1891

History.—Work mostly delegated to assistants, but always revised and signed by me.

Annual Report of the Board of Regents of the Smithsonian Institution for
the year ending June 30, 1891. Report of the U. S. National Museum,
Washington, 1892 [appeared in 1893], pp. 255–257.

January (?), 1894—Ætat. 52.

354. Bibliography for the year ending June 30, 1891

History.—Written October 30–31, 1891.

Ibid., pp. 761–763.

LESTER F. WARD. Report on the Department of Recent Plants in the National Museum, 1888.

Report of the Smithsonian Institution (U. S. National Museum), 1888 (1890), pp. 191–193.

—— Ueber die Reste eines Brotfruchtbaums, *Artocarpus Dicksoni*, n. sp., aus den Cenomanen Kreideablagerungen Grönlands; von A. G. Nathorst.

Amer. Jour. Sci., third series, XL, September, 1890, p. 257.

Notice of a paper with the above title in the *Köngl. Svenska Vetenskaps-Akademiens Handlingar*, Bd. xxiv, pp. 1–10, pl. i.

—— Tertiäre Pflanzen der Insel Neusibirien; von J. Schmalhausen.

Amer. Jour. Sci., third series XL, September, 1890, pp. 257, 258.

Notice of a paper with the above title in *Mém. Acad. Imp. Sci. de St. Pétersbourg*, 7^e série, tome xxxvii, No. 5, 1890, p. 22, pl. ii.

—— La Flora dei Tufi del Monte Somma; by Luigi Meschinelli.

Amer. Jour. Sci., third series, XL, September, 1890, p. 258.

Notice of a paper with the above title in *Rend. R. Accad. Sci. Fis. e Mat. of Naples*, April, 1890. Separate, p. 8.

—— Remarks on some fossil remains considered as peculiar kinds of marine plants, by Leo Lesquereux.

Amer. Jour. Sci., third series, XL, September, 1890, p. 258.

Notice of a paper with the above title in *Proc. U. S. Nat. Mus.*, xiii, No. 792, 1890, pp. 5–12, pl. i.

—— Origin of the Plane Trees.

American Naturalist (Philadelphia), xxiv, September, 1890, pp. 797–810, pl. xxviii.

This paper is in the main a review of Prof. Johann Jankó's article entitled "Abstammung der Platanen," which appeared in volume XI,

No. 4, of Engler's *Botanische Jahrbücher*. The chief criticism is directed against the geological arguments of Prof. Jankó, who, moreover, was not acquainted with Mr. Ward's several papers on the origin of the genus *Platanus*.

- Revue des travaux de paléontologie végétale parus en 1888 ou dans le cours des années précédentes, par le Marquis Gaston de Saporta.

Amer. Jour. Sci., third series, XL, November, 1890, p. 422.

Notice of a paper with the above title in the *Revue générale de Botanique*, tome II, Paris, 1890.

- Notes on the Leaves of *Liriodendron*, by Theodor Holm.

Amer. Jour. Sci., third series, XL, November, 1890, pp. 422, 423.

Notice of a paper with the above title in *Proc. U. S. Nat. Mus.*, XIII, 1890, pp. 15-35, plates iv-ix.

- The unearned increment of machine-made wealth.

The True Commonwealth (Washington), I, February, 1891, p. 165.

Remarks at the True Commonwealth Club, January 12, 1891, on Prof. H. C. Adams' paper "Is Civilization Just to the Workingman," in which the expression used as a title was employed and discussed.

- Mind as a social force.

The Cleveland Citizen (Cleveland, Ohio), February 20, 27, 1891, p. 1.

Reprint of "Mind as a Social Factor" from *Mind*, (London), IX, October, 1884, p. 563.

- Handbuch der Palaeontologie herausgegeben von Karl Zittel. II. Abth., Palaeophytologie; bearbeitet von Prof. W. P. Schimper und Dr. A. Schenk. Münster und Leipzig, 1879-1890.

Amer. Jour. Sci., XLI, April, 1891, p. 330.

Brief notice of the above work.

- Monographie der baltischen Bernsteinbäume, von H. Conwentz. Danzig, 1890.

Amer. Jour. Sci., third series, XL, April, 1891, pp. 330, 331.

Notice of the above work.

- Ueber die Fructification von *Bennettites Gibsonianus* Carr., von H. Grafen zu Solms-Laubach. Leipzig, 1890.

Amer. Jour. Sci., third series, XLI, April, 1891, p. 331.

Notice of the above memoir from the *Botanische Zeitung*, Vol. XLVIII.

- Die fossile Flora von Schönegg bei Wies in Steiermark, von C. Ettingshausen. I. Theil, Wien, 1890.

Amer. Jour. Sci., third series, XLI, April, 1891, pp. 331, 332.

Notice of the above memoir from *Denkschr. Wien. Akad.*, Bd. LVII.

- Das australische Florenelement in Europa, von C. Ettingshausen, Graz, 1890.

Amer. Jour. Sci., third series, XLI, April, 1891, p. 332.

Notice of the above memoir.

- Untersuchungen über Ontogenie und Phylogenie der Pflanzen auf paläontologische Grundlage, von C. Ettingshausen and Franz Krašan. Wien, 1890.
Amer. Jour. Sci., third series, xli, April, 1891, p. 332.
 Notice of the above memoir in *Denskschr. Wien. Akad.*, Bd. LVII.
- The transmission of culture.
The Forum, xi, May, 1891, pp. 312-319.
 A criticism of the doctrine of Prof. August Weismann that acquired talents are not transmitted through heredity.
- Neo-Darwinism and Neo-Lamarckism.
Proc. Biol. Soc. of Washington, 1891, pp. 11-71.
 Annual address of the president of the society, delivered January 24, 1891. A historical and critical review of the modern scientific thought relative to heredity, and especially to the problem of the transmission of acquired characters. The following are the several heads involved in the discussion: Status of the problem; Lamarckism; Darwinism; Acquired characters; Theories of heredity; Views of Mr. Galton; Teachings of Professor Weismann; A Critique of Weismann; Neo-Darwinism; Neo-Lamarckism; The American "School"; Application to the human race. In so far as views are expressed, they are in the main in line with the general current of American thought and opposed to the extreme doctrine of the non-transmissibility of acquired characters.
- Report on the Department of Fossil Plants in the U. S. National Museum, 1888.
Report of the Smithsonian Institution (U. S. National Museum), 1888 (1890), pp. 189, 190.

January, 1894—Ætat. 52.

355. The Political Ethics of Herbert Spencer *

History.—Written January 25 to February 25, 1893. When at the Chautauqua meeting of the American Economic Association on August 25, 1892, Professor Patten asked me to review the later works of Herbert Spencer for the *Annals* of the Academy of Political and Social Science, and I consented to do so. I had read Spencer's *Data of Ethics* when it appeared in 1879. I read his *Justice* in the early part of 1892. His *Social Statics Abridged and Revised* had reached me in March but I had not finished reading it. I had hastily read the original edition of 1850, which I found in the library of the Treasury Department. The first volume of the *Principles of Ethics* had reached me on July 16, but I had not had time to read Parts II and III (Part I is the *Data of Ethics*). On my return to Washington I resumed these readings, and before the end of the year I had finished them, including the *Man versus the State*, bound with the *Social Statics*, but which had appeared as four articles in the *Contemporary Review*.

On January 19, 1893, I commenced work on my review of all these works, and spent a week in making slip notes, which I arranged in the order in which I proposed to treat the various topics. By January 25, I was ready to write them up. The rough draft was finished on February 19, and the final draft on February 25. I sent the manuscript to

*"Justice:" Being Part IV of the "Principles of Ethics:" New York, 1891. The "Principles of Ethics:" New York, vol. i., 1892, vol. ii., 1893. "Social Statics, Abridged and Revised;" together with "The Man *versus* the State:" New York, 1892.

Professor James for the *Annals* on February 27. He had asked me to make it a thirty-page article, and I had considerably overrun that figure. There was so much matter waiting that it had to take its chances. On April 12, I received an invitation to come to Philadelphia on the 27 of that month, when the Academy would hold its Nineteenth Scientific Session, and read my paper before the Academy. This I agreed to do, and I made it the last of a series of lectures on different subjects that I had to deliver just at that time in Rochester, Ithaca, and Philadelphia. The paper and discussion occupied the whole evening and it was appreciated by the members.

On July 3, I received Vol. II of the *Principles of Ethics*, and proceeded at once to read the two parts that were new, the first part (Part IV) being the *Justice*. This was finished before I left for the World's Fair and the Black Hills, from which I did not return till the middle of September. I found much other work awaiting me, and it was not till November that I sent for the manuscript to add the new matter. It was returned to me and I added the discussion of Negative and Positive Beneficence (Parts V and VI), and sent it back on November 13, in the state in which it appeared in the *Annals* for January, 1894, for which it had been long designed by the editors. *Public Opinion* published an extended extract from this article, running through two numbers.

Annals of the American Academy of Political and Social Science, Philadelphia, Vol. IV, No. 4, January, 1894, pp. 582-619 [90-127]; Publications of the Academy No. 111; Public Opinion, Washington and New York, Vol. XVI, No. 15, Jan. 11, 1894, pp. 338-339; No. 16, Jan. 18, 1894, p. 362.

IT is often said that great thinkers who are allotted a prolonged career begin as revolutionists and end as reactionists. Some such verdict will probably be rendered in the case of Herbert Spencer when history shall have summed up the work of his life. The general law results from the circumstance that while "the world moves" human character is fixed. The influence exerted by this class of men, working in harmony with the general forward tendencies of society, causes a rapid advance in all the active centers of thought, the aggregate of which in half a century is very considerable. On the contrary, the position taken by a young and vigorous mind just entering its productive period is usually as advanced as it will be at any

later period, often more so. This fixity is further strengthened by a certain pride of opinion which favors the defence of all earlier expressions of thought, and thus is a double barrier erected to the subsequent modification of views that have once been uttered. The general result is that the moving thought of the age soon overtakes the stationary thought of the man, and, at a certain point in his career, rides past him, leaving him behind in the race. In Mr. Spencer's case, as in most cases, such modifications as have taken place in his views have been in a backward rather than a forward direction, giving to his later utterances a less radical or more conservative character. Such have been his changes of attitude toward the working classes, to a less extent toward women, on religious questions, and on the land question. It is natural that there should be a marked difference between the tone of his early productions, inspired by the warm sympathies of youth, and his mature deliverances, after his ardor had been cooled by time and experience; and these influences alone are sufficient to account for the slight alterations mentioned, while his surrender of the doctrine of a "moral sense," so vigorously contended for at the outset, is creditable to him in showing that he was capable of yielding to the logic of facts.

Of Mr. Spencer's "Synthetic Philosophy," originally planned to consist of ten volumes and thirty-one parts, and often referred to as the most comprehensive cosmological scheme ever conceived by man, nine volumes, containing twenty-nine parts, have actually appeared, and are in the hands of the reading public, so that there only remains one volume containing two parts unpublished, and some of this is doubtless in an advanced state of preparation, if not actually in press. It is, therefore, safe to say that the whole of Mr. Spencer's legion of readers, including those who least agree with him, join in the general hope that life and strength may hold out until the end is reached, and as much longer as may be.

The works of Mr. Spencer are so universally read that there is little occasion for explaining their contents, and, indeed, any proper review of even the latest would probably be a work of supererogation. It will be more profitable, after briefly indicating what parts it is proposed specially to consider, to bring the various topics treated in these parts together into a somewhat logical order, analyze and discuss their general bearings, and set forth such considerations, conclusions, and natural corollaries, as seem to grow out of the *tout ensemble*. In a word, an analytical or critical, rather than an expositional form of treatment seems to be demanded.

The first part of Vol. I of the "Principles of Ethics," occupying somewhat more than half of the volume, has been before the public as the "Data of Ethics" since 1879, and there are few books

that are now better known. This part will therefore receive only incidental mention. The remainder of the volume (Parts II and III) treats mainly of individual ethics and does not for this reason justify detailed treatment in this sketch. On the other hand "Justice," which forms Part IV of the "Principles of Ethics," or the first part of Vol. II, deals only incidentally with private morals and chiefly with political ethics. It, therefore, notwithstanding its earlier date, calls for a somewhat thorough examination. Part V treats of what he calls "Negative Beneficence," or what ought not to be done, and Part VI of "Positive Beneficence," or what ought to be done, the two together constituting his "Ethics of Social Life." These topics seem to relate to the individual and not to the State, nevertheless, as will be seen, a large amount of political ethics is worked into the treatment, which cannot be wholly ignored.

The remaining volume which it is proposed to bring within the purview of this paper has a different claim. It consists of two entirely distinct treatises, the first, occupying two-thirds of the volume, being his "Social Statics, Abridged and Revised," which is therefore now in such shape that it may be regarded as reflecting his mature views. The other treatise, completing the volume, is a reproduction, unchanged except by the addition of a short note, of the pamphlet entitled "The Man *versus* the State," published by Williams and Norgate in 1884. This pamphlet consists of a series of four articles that appeared in the *Contemporary Review* from February to July of that year, together with a "postscript" of six pages. These articles are entitled respectively: "The New Toryism," "The Coming Slavery," "The Sins of Legislators" and "The Great Political Superstition." They may be regarded as making an application to current political affairs of the principles laid down in his "Ethics" and "Social Statics."*

That all these works come within the scope of ethics, as Mr. Spencer understands it, is shown by the fact that his "Justice" is to so large an extent a mere revision and repetition in substance of the "Social Statics." In the latter the law of "equal freedom" is laid down as clearly as in the former, and the discussion of its resultant principles as well as its "corollaries" follows the same lines. In fact, the titles of the chapters in the two books are to a large extent the same, often literally identical: Such are the chapters in "Justice" entitled "The Right of Property," "The Rights of Women," "The Rights of Children," "Political Rights—so-called," "The Constitution of the State," "The Duties of

* All the works above enumerated have been received as they appeared by the writer of this paper, either directly from the author's hand or through his American publishers, a courtesy which is here publicly and thankfully acknowledged.

the State," and "The Limits of State Duties;" and even where the heads of the chapters differ the subjects discussed are usually the same. These and other similar titles also indicate how largely his ethics relates to public matters and the duties of which he speaks are the duties of the State. The first volume, however, of his "Principles of Ethics," consisting of the "Data of Ethics," the "Inductions of Ethics" and the "Ethics of Individual Life," deals more especially with the general philosophy of duty.

All are of course acquainted with the general character of Mr. Spencer's ethics as set forth in the "Data of Ethics," the doctrine that happiness is the end of action, and the argument that this will ultimately be attained through altruistic action becoming that which yields the greatest happiness, the most egoistic. To the "Data of Ethics," as originally published, is now added a rediscovered chapter in the form of an appendix, entitled, "The Conciliation," although this is also the title of Chapter XIV, which covers much the same ground and may have been an attempt to supply the lost one. This "conciliation" is the reconciliation between egoism and altruism, and it is here extended to society as a collective unit and illustrated by reference to those animals, such as bees, which have acquired social natures and become almost perfectly adapted to a social state. Their purely altruistic actions have come to be prompted by instincts, and are therefore the only ones that can satisfy their desires; and he draws the conclusion that human society may one day be so perfect that a purely hedonistic activity will be consistent with the highest good of the community.

Aside from the natural objection, which probably ought not to be raised, but which will be raised, that all this is visionary and utopian, there are two aspects from which it may be instructive to view it. In the first place it is open, along with all altruistic reasoning, to the charge of being self-destructive. Altruism is based on the assumption of the real or possible unhappiness of others, which unhappiness consists entirely in the inability to pursue egoistic ends. A state in which all were able to pursue egoistic ends and only such would leave no room for altruistic action, and would thus rule out the whole domain of ethics from a scheme of philosophy. This is the general objection that lies against Mr. Spencer's classification of the sciences as embodied in his works. It is surprising that a mind so logical could have failed to see that ethics is not an independent science at all, that it relates to a theoretically transient state of society, which, as he himself shows, is to pass away so soon as egoistic and altruistic actions shall have become mutually adjusted, that the "conciliation" is simply the disappearance of altruism with the supremacy of innocent egoism in which happiness alone consists. Ethics, therefore, during this transition period, is merely a depart-

ment of sociology, and only entitled to a very subordinate place in the sociological scheme. That he should have made it the great end of all his labors, saying of it that "this last part of the task it is, to which I regard all the preceding parts as subsidiary,"* is to be compared in inconsistency with the belief of certain saintly beings whose only happiness in this world is derived from ministering to the afflicted, that they are to be rewarded by greater happiness in a world where there are no afflicted to minister to.

The other reflection that naturally arises from this view of ethics is that social insects, whose perfect organization society is to imitate, have reached the extreme stage of typical socialism, as pictured by the most unequivocal advocates of that social condition. Individuality is here utterly lost, and all the members of the society are reduced to the dead level of equality, while over the whole swarm the "queen," as the specialized representative of the uniform collective will, reigns supreme without the need of exercising the slightest authority. The social machine is complete and automatic.

In accord with Mr. Spencer's exaggeration of the rank that ethics should take in a scheme of philosophy, is his equal exaggeration of the importance of a "regulative system." The statement in the preface to the "Data of Ethics" that "few things can happen more disastrous than the decay and death of a regulative system no longer fit, before another and fitter regulative system has grown up to replace it," taken in connection with the apprehension just before expressed that his own system of ethics might not appear unless he turned aside and prepared it in advance of its natural place in the scheme, certainly admits of the interpretation that this is the "fitter regulative system" to which he refers. Such confidence can only be compared with that which Comte had in the early acceptance and ultimate supremacy of his moral and religious system.

The truth that ethical systems and codes merely reflect the state of morals prevailing at any given time and place, and do not themselves influence that state, and the kindred truth that a certain standard of morals is a condition to the existence of the social state itself, do not seem to have taken a firm hold of Mr. Spencer's mind, although occasional glimpses of them are apparently caught; as where he says that "the genesis of such codes, and partial conformity to them, have been necessary; since, if not in any degree recognized and observed, there must result social dissolution."† It seems remarkable that so strong an advocate of the merely historical or natural history method of studying sociology, which he labels all over with "take care!" and "hands off!" should propose in the case of ethics, which is

* "Data of Ethics," p. 5 (preface to Part I when issued separately).

† "Principles of Ethics," vol. i., p. 316.

so obviously a social necessity, and therefore self-adjusting, to "interfere" and "regulate" the conduct of individuals. The surprise is still further heightened at finding him correctly attributing the real moral progress of the world not to the "regulative system," but to "the progress of civilization"* and to "mental evolution."†

The "Inductions of Ethics" is a highly instructive treatise, passing in review the conduct of all the nations of the earth, especially of the uncivilized races, with their widely conflicting customs. Its perusal is well calculated to enable the reader to penetrate the conventionalities of his own time and to distinguish, as few persons can do, between conduct which is intrinsically moral or immoral and that which is so only because the prevailing code approves or condemns it. The various ideas that have prevailed in the past, and now prevail, among different peoples relative to justice, generosity, humanity, veracity, obedience, industry, temperance, chastity, etc., are set forth in the clear and orderly manner that characterizes all of Mr. Spencer's writings of this class, and are supported by all the authority that he is able to summon. The unreliability of these sources of information has caused much of his sociological work to be severely criticised, if not entirely rejected, and it is this perhaps that has brought forth in the present case the following disclaimer:

"Not all travelers are to be trusted. Some are bad observers, some are biased by creed or custom, some by personal likings or dislikings; and all have but imperfect opportunities of getting at the truth. Similarly with historians. Very little of what they narrate is from immediate observation. The greater part of it comes through channels which color, and obscure, and distort; while everywhere party feeling, religious bigotry, and the sentiment of patriotism, cause exaggerations and suppressions. Testimonies concerning moral traits are hence liable to perversion."‡

In the "Ethics of Individual Life" are treated the subjects of activity, rest, nutrition, stimulation, culture, amusements, marriage, and parenthood. Trite subjects these, and difficult to raise above the commonplace, yet, conceived as filling each its appropriate niche in a great world scheme, he has succeeded in rendering them quite palatable, while throughout the chapters one finds the spice of originality and breadth of conception lending an unexpected flavor. No better example could be given than is furnished by his treatment of "stimulation," in which he rightly condemns the excesses that are committed in the supposed performance of duty, which society usually approves because the acts are displeasurable, reserving its condemnation for those excesses which are in themselves enjoyable, apparently on the principle that "the damnable thing in the misconduct is the production of pleasure by it."§

* *Ibid.*, p. 293.

† *Ibid.*, p. 307.

‡ *Ibid.*, p. 464.

§ *Ibid.*, p. 508.

Probably the least scientific part of Mr. Spencer's entire system is his treatment of the ethics of social life, or negative and positive beneficence. Negative beneficence consists of restraints of various kinds, as on free competition, free contract, blame, praise, etc. He makes all such restraints to depend upon the principle of altruism to be displayed by those who are to exercise these restraints. He admits that under the operation of free competition and free contract circumstances often give certain individuals an advantage; which with him is as it should be, since he is able to see no other reason for this advantage than the superiority of such individuals, who therefore deserve their advantage; but negative beneficence enjoins all such not to press their advantage to the full extent that justice entitles them to do, but to be merciful and not altogether crush and destroy those who are unfortunate because they are unworthy. He says:

"The battle of life as carried on by competition, even within the bounds set by law, may have a mercilessness akin to the battle of life as carried on by violence. And each citizen, while in respect of this competition not to be restrained externally, ought to be restrained internally. Among those who compete with one another in the same occupation, there must in all cases be some who are the more capable and a larger number who are the less capable. In strict equity the more capable are justified in taking full advantage of their greater capabilities."*

Again:

"Anyone who, by command of great capital or superior business capacity, is enabled to beat others who carry on the same business, is enjoined by the principle of Negative Beneficence to restrain his business activities, when his own wants and those of his belongings have been abundantly fulfilled; so that others, occupied as he is, may fulfill their wants also, though in smaller measure."†

Once more:

"Under pressure entailed by a commercial crisis, a trader, while unable to get further credit from his bank, is obliged to meet a bill immediately falling due. One who has capital in reserve is asked for a loan on the security of the trader's stock. He may make either a merciful or a merciless bargain. He may be content with a moderate gain by the transaction, or, taking advantage of the other's necessities, may refuse except on conditions which will involve immense loss, or perhaps eventual bankruptcy. Here, again, there is occasion for the self-restraint which sympathy prompts."‡

These are fair samples of negative beneficence as he understands it. It results entirely from the inherent goodness or sympathy of the agent, and the whole treatment, despite its

* "Principles of Ethics," vol. ii., p. 277.

† *Ibid.*, pp. 282-83.

‡ *Ibid.*, p. 290.

stately form, is not much above the ordinary moralizing so familiar to all. Sympathy exists and often mitigates hardship, and it will do so more and more as the race advances, but everyone knows that it cannot be depended upon as a business principle. It is only an accidental and occasional element and not a reliable factor in social science. Anyone who should try to persuade the officers of a trust to sell the commodity they control at a price below that which yields them the largest profit would in this country be classed as a "crank."

In his treatment of positive beneficence, Mr. Spencer first deals with the duties of husbands to wives, parents to children, children to parents, and the sound and healthy to the sick and injured, in all of which there is much to approve, although for the most part the conclusions simply follow as a matter of course, and it is almost to be regretted that a regard for completeness should have required such subjects to be treated at all. But when he comes to the question of relief to the poor, which, according to him, naturally belongs here, an opportunity is afforded for the vigorous expression of his well-known views on poor rates and public charities in general. His defence of private charity on the ground of its subjective effect in ennobling the giver has a certain force, much of which, however, is lost when it is remembered from what diverse and often unworthy motives giving proceeds. He justly condemns those forms of charity that tend to create a dependent class, but he fails to prove that this is not as effectually done by private as by public methods. To hear him, one would hardly think that the former ever produce this result. But are the pauper laws of England more pernicious in this direction than is the universal private almsgiving of Italy, for example?

He does not touch the real kernel of the matter, which does not relate to the source of the act, but to the manner of its performance. Beneficence should only be directed toward those who are entitled to it in consequence of the defective social conditions under which they live. It should only go so far as to remedy this social defect. It should be so directed as to ennoble instead of demoralizing the recipient. All this can be done, as close students of the questions have proved, and this is scientific charity. The question is then narrowed down to ascertaining whether this can best be done by the individual or by society. That it cannot be done by single individuals actuated by a multitude of vague, conflicting, and whimsical motives, all must concede. It can be done to a limited extent by large associations with enlightened officers. The larger such associations are the less personal will be their action, and hence the more successful. The most impersonal of all organizations is the State, and while much even here depends upon the character of the officers, the danger that unworthy

or illegitimate influences will control their action is here at its minimum.

In discussing political beneficence, Mr. Spencer is very severe on the officers of government, and says much about "eternal vigilance," etc., attacks Parliament for over-legislation and the law courts for delinquency. "Political beneficence," he says, "will seek removal of these enormous evils more energetically than it will seek constitutional changes or extensions of State management." After enumerating the principal evils which political beneficence is to remove, among which we find "bubble companies," "swindling syndicates," "incorporated bodies," "official organizations," "bank failures," and "company disasters," he adds:

"Political beneficence, then, prompting this 'eternal vigilance,' will, I say, be ever ready to detect possible modes of corruption; ever ready to resist insignificant usurpations of power; ever prepared to challenge transactions which in the smallest ways deviate from the proper order; and ever ready to bear the odium consequent on taking such courses."*

To all this no one should object. The evils enumerated are among the worst that society suffers. The only difficulty is to reconcile Mr. Spencer's sanction of State action in suppressing them with his law of equal freedom as set forth in his political ethics proper, which it is our next task to consider. The acts he condemns clearly result from that law, and there is a manifest inconsistency in his philosophy.

Passing now from individual to social ethics, as set forth in "Social Statics" and in "Justice," we are confronted at the outset by the "law of equal freedom," which is the pivot upon which Mr. Spencer's entire system turns. It is stated in the earlier work in the following form:

"Every man has freedom to do all that he wills, provided he infringes not the equal freedom of any other man,"†

and in the later one:

"Every man is free to do that which he wills, provided he infringes not the equal freedom of any other man;"‡

that is, he has seen no reason for making any essential change. Of course the expression "has freedom," or "is free," means: ought to be free, or, is ethically free. It is freedom *de jure*, and not necessarily *de facto*. The *proviso*, however, is ambiguous. To infringe the equal freedom of another may mean to interfere with his freedom either to perform the same act or to resist its

* *Ibid.*, p. 421.

† "Social Statics, Abridged and Revised," p. 55.

‡ "Justice," p. 46.

performance. Resistance to such performance would not, strictly speaking, be "equal freedom," yet most acts of aggression call for resistance and not for action of the same kind. If one man covets what another has and seeks to obtain it in any other way than by mutual agreement, he would, according to the literal terms of the formula, be ethically free to proceed, so long as this did not interfere with a third party seeking the same object. If equal freedom means the freedom of the party aggressed upon to resist, then the only meaning of the law is that anyone is free to do whatever he wills, provided all countervailing efforts are unmolested. The so-called law of equal freedom is therefore not a rule of human ethics, which would involve a conscious sacrifice. It might be called the rule of animal ethics, if this did not involve a contradiction of terms. The wolf in descending upon the fold does not infringe the equal freedom of any other wolf to do the same, nor of the sheep to resist such an attack. And as "man is a wolf to man" the same is true in his case.

Mr. Spencer's attempts to escape from this complexion, to which his law of equal freedom comes, are unsuccessful. His qualifications, exceptions, admissions and supplements, either neutralize the law entirely or they leave it untouched. To say that no one is free to aggress, is to say the opposite of what the formula says. To say that it refers to a social state in which there is no desire to aggress, is to confess the invalidity of the law in any real case.

The fact is that Mr. Spencer's law of equal freedom was not framed as a law of individual ethics. In laying it down he was not thinking of conduct between men and men as co-ordinate factors in society. He was thinking of the conduct of the *State* toward individuals. "Freedom" in his formula means *civil right*. In plain terms, he means that the State has no right to interfere with the conduct of the individual except where the individual infringes the liberty of another individual. If he does not say this in so many words his whole social and ethical philosophy teaches it, and it is not worth while to dwell upon the "dilemmas" which the narrower view involves. His ethics, therefore, as taught in these two works, in "The Man *versus* the State," and in his other kindred writings, is essentially a political ethics, and deals almost exclusively with the rights of the State.

This leads us to consider, first of all, his conception of the origin, nature, and functions of the State. With his much iterated doctrine that the order of development in society has been from militancy to industrialism, or from a *régime of status* to one of contract, we need have little to do, as it belongs more especially to his sociology, and is elaborated in earlier works. It is, however, important to know that students of ethnology deny that government originated in war, and show that it grew naturally out of the family relation, and is based primarily

on kinship. It is also impossible that a society should exist for any prolonged period in a state of war. And even if there had ever been races that subsisted entirely on the booty acquired in war, their existence would imply that of industrial races from whom these supplies must be taken. And yet, to judge from many of Mr. Spencer's statements, it would be hard to avoid the conclusion that he considered the whole world to have been in a chronic state of war during its early history, and to have been only quite recently transformed into an industrial state. It cannot, however, be denied that the wars that have almost always prevailed between tribes, nations, and races resulted in enforced labor on the part of the masses, which later gradually gave way to what we call free labor, based on such contracts as the laborer is able to make with his employer.

Mr. Spencer early espoused the doctrine of an analogy at least between society and a living organism,* propounded twelve years earlier by Comte† (he disclaims all acquaintance with Comte at that date), and although he has variously qualified it under the spur of criticism, he still adheres to its substance in so far as to treat society as under the absolute dominion of the same class of laws that govern the physiological economy of living creatures. Owing to a preconception, however, he treats the evolution of society as taking place through differentiation alone, whereas biology owes to him the formulation of the important law that organic evolution always consists in the mutual processes of differentiation *and integration*. As the parts become more and more specialized the wholes are more and more generalized, until a perfect organism of the higher types becomes completely integrated and under the dominion of one supreme ganglionic center. Logical consistency would therefore have required him to look upon society, even in its most advanced state, as the analogue of some of the lower types of organisms, in which the degree of integration is far from complete, and each individual, like the cells of the *Labyrinthuleæ* and other protists, is to a large extent independent of the general *cœnobium*, or society. He should then have shown how even this state was developed from a lower one of complete individual independence, corresponding to that of the *Amœbæ*. Finally, it would have behooved him to point out that this natural process of organic development was still going on in society as it has gone on in biology, and that a stage would be ultimately reached in which a supreme center of social consciousness, or *social ego*, would exist, having full control of the hierarchy of subordinate centers and of the individual members of society.

Such would have been the logical outcome of the doctrine

* 1850. See "Social Statics, Abridged and Revised," p. 267 ff.

† 1838. See "Philosophie positive," vol. iv., pp. 285, 311, Paris, 1869.

of a social organism. But instead of this we find him talking in the following fashion:

"Concerning individual organisms and social organisms, nothing is more certain than that advance from lower to higher, is marked by increasing heterogeneity of structures and increasing subdivision of functions. In both cases there is mutual dependence of parts, which becomes greater as the type becomes higher; and while this implies a progressing limitation of one function to one part, it implies also a progressing fitness of such part for such function."*

Nothing, it will be observed, is here said about the "progressing" subordination of all the parts to the whole, which he above all others has shown to be the characteristic mark of organic progress from lower to higher types of development. The singular thing is that he should introduce this principle in support of the statement made on the same page that with further progress "there may rightly go further relinquishment of functions which the State once discharged," whereas animal organisms progress through the gradual assumption by the supreme authority of the general direction of all the subordinate functions of the body.

Mr. Spencer escaped the consequences of his own doctrine in two ways. First, he early denied the strict analogy between society and an organism, laying special stress upon the fact that *society* is a mere abstraction, and not a conscious individual, capable of feeling. In this he is, of course, literally speaking, right, and the corollary he freely draws that there is no object in working for the good of society conceived as a conscious being, but that society exists for the individual and not the individual for society, is eminently sound. Still it cannot be denied that a sort of consciousness can be properly predicated of that body of individuals whom society, by whatever method, appoints to preside over, control, and regulate its operations. In other words, *government*, which as Mr. Spencer admits always rudely represents society, changing with it and corresponding to it in character and quality, may be properly regarded as the supreme center of social consciousness, often feebly integrated, and little capable of directing affairs, but still the homologue of the developing brain of animal organisms. And it is further true that with the progress that has taken place in government, from the more autocratic and despotic to the more democratic and representative forms, the degree of integration has strengthened, so that in the apparently weak and flexible democracies of to-day there is really a far more firm and compact social state than in the stiff autocracies of former ages, when there were, so to speak, no nerve currents permeating society and keeping every part in communication with the great social

* "Justice," p. 229.

center. So that the progress in social integration is substantially parallel with that which has gone on in organic life.

In the second place, Mr. Spencer has escaped the consequences of his doctrine by failing, purposely or otherwise, to recognize that the analogy holds good only in its psychic aspects. His comparisons are with purely physiological functions. He repeats his analogies with the organs of nutrition, circulation, respiration, and reproduction, but rarely mentions the nervous system in this connection. It is, however, here and here only that the analogy has force, and when followed out it points strongly toward a progressive development of the social consciousness until there shall ultimately be reached a stage in which the supreme social center shall be in such firm and friendly relations with the lower centers and with the individual units of society that it can care for them in somewhat the same way that the sane mind guards the well-being and safety of the sound body. But Mr. Spencer was careful not to be led into any such train of logic as this, which would have been fatal to his early preconceptions as to the functions of the State, and as a consequence he proceeded to elaborate a social science based directly upon the laws of life, quite ignoring the great stage of psychic phenomena which intervenes between life and social action and becomes the chief determining factor of the latter.

As this is a somewhat serious charge it needs to be substantiated. It may be more definitely formulated by saying that Mr. Spencer's sociology and political ethics rest upon *biology* and not upon *psychology*. If we seek a general term to express the fundamental principle that seems to underlie every statement of his works we shall perhaps find it in the word *self-adjustment*. With him everything that takes place properly is automatic. The following passage will serve as a sample of this biological ethics:

"This principle of self-adjustment within each individual, is parallel to that principle of self-adjustment by which the species as a whole keeps itself fitted to its environment. For by the better nutrition and greater power of propagation which come to members of the species that have faculties and consequent activities best adapted to the needs, joined with the lower sustentation of self and offspring which accompany less adapted faculties and activities, there is caused such special growth of the species as most conduces to its survival in face of surrounding conditions. This, then, is the law of sub-human justice, that each individual shall receive the benefits and the evils of its own nature and its consequent conduct."*

Or again:

"Since this connection between conduct and consequence is held to be just, it follows that throughout the animal kingdom what we call justice, is the

* *Ibid.*, p. 9.

ethical aspect of this biological law in virtue of which life in general has been maintained and has evolved into higher forms; and which therefore possesses the highest possible authority." *

The importance of this aspect of the question will justify one further quotation:

"The prosperity of a species is best subserved when among adults each experiences the good and evil results of his own nature and consequent conduct. In a gregarious species fulfillment of this need implies that the individuals shall not so interfere with one another as to prevent the receipt by each of the benefits which his actions naturally bring to him, or transfer to others the evils which his actions naturally bring. This, which is the ultimate law of species life as qualified by social conditions, it is the business of the social aggregate, or incorporated body of citizens, to maintain." †

In this passage it is made clear that the general self-adjusting law of nature is held to apply to society, and man is duly advised that nature is to be imitated. Other passages, however, put this much stronger:

"The broad fact then, here to be noted, is that Nature's modes of treatment inside the family-group and outside the family-group are diametrically opposed to one another; and that the intrusion of either mode into the sphere of the other, would be destructive either immediately or remotely. Does any one think that the like does not hold of the human species? He cannot deny that within the human family, as within any inferior family, it would be fatal to proportion benefits to merits. Can he assert that outside the family, among adults, there should not be, as throughout the animal world, a proportioning of benefits to merits? Will he contend that no mischief will result if the lowly endowed are enabled to thrive and multiply as much as, or more than, the highly endowed? . . . Society in its corporate capacity, cannot without immediate or remoter disaster interfere with the play of these opposed principles under which every species has reached such fitness for its mode of life as it possesses, and under which it maintains that fitness." ‡

It is clear from this that Mr. Spencer is utterly blind to the most conspicuous fact in society, that under an unregulated or "competitive" *régime* there is very little relation between "benefits" and "merits" or "fitness." It is partially to enforce such a correspondence that the state exists, and the essence of the idea of "justice," in the human sense, is the proportioning of benefits to merits, which "Nature's methods" do not secure. A typical example is the gradual substitution of trial by law for trial by battle, which formerly prevailed. In the complications of modern society "conduct" has little to do with this proportioning, and bad conduct is fully as successful as good. The "accident of position" is a much more potent factor. The State is now at work upon this difficult problem, still striving, as ever it has striven, to proportion benefits to merits, *i.e.*, to enforce

* *Ibid.*, p. 150.

† *Ibid.*, p. 213.

‡ "The Man *versus* the State," p. 361.

justice against nature's methods. But let us hear Mr. Spencer further:

"Pervading all Nature we may see at work a stern discipline which is a little cruel that it may be very kind. That state of universal warfare maintained throughout the lower creation, to the great perplexity of many worthy people, is at bottom the most merciful provision which the circumstances admit of. It is much better that the ruminant animal, when deprived by age of the vigor which made its existence a pleasure, should be killed by some beast of prey, than that it should linger out a life made painful by infirmities, and eventually die of starvation. By the destruction of all such, not only is existence ended before it becomes burdensome, but room is made for a younger generation capable of the fullest enjoyment; and, moreover, out of the very act of substitution happiness is derived for a tribe of predatory creatures."*

No one, of course, objects to this phase of purely animal ethics for animals, but when prescribed for men, as in the following passage, the dose becomes excessive:

"A sad population of imbeciles would our schemers fill the world with, could their plans last. A sorry kind of human constitution would they make for us—a constitution continually going wrong, and needing to be set right again—a constitution ever tending to self-destruction. Why, the whole effort of Nature is to get rid of such—to clear the world of them, and make room for better. Mark how the diseased are dealt with. Consumptive patients, with lungs incompetent to perform the duties of lungs, people with digestive organs that will not take up enough nutriment, people with defective hearts which break down under effort, people with any constitutional flaw preventing due fulfillment of the conditions of life, are continually dying out, and leaving behind those fit for the climate, food, and habits to which they are born."†

This last, and much more in the same vein, is said under the head of "Sanitary Supervision" by municipalities and other governing agencies, as an argument against it, and against all public acts arising out of sympathy for the unfortunate, which action, he declares, "defeats its own end. It favors the multiplication of those worst fitted for existence, and, by consequence, hinders the multiplication of those best fitted for existence—leaving, as it does, less room for them."‡

This doctrine, laid down in his "Social Statics," in 1850, he retains in the abridgment and reaffirms in his later writings. After quoting extensively from the early work and reapplying the doctrine of natural selection to society, he adds:

"And yet, strange to say, now that this truth is recognized by most cultivated people—now that the beneficent working of the survival of the fittest has been so impressed on them that, much more than people in past times, they might be expected to hesitate before neutralizing its action—now more

* "Social Statics, Abridged and Revised," p. 149.

† *Ibid.*, p. 205.

‡ *Ibid.*, p. 207.

than ever before in the history of the world, are they doing all they can to further survival of the unfittest!"*

These citations ought to satisfy the most incredulous that the political ethics of Herbert Spencer, as well as his sociology, rests directly upon biology and completely ignores the influence of both feeling and thought in rendering human conduct and social life a field distinct from that in which the irrational animal acts and lives. He carries his general principle through a great number of departments of social action, applying everywhere his law of equal freedom. He recognizes that society is the theatre of natural laws, but to him these are only the laws of life, or of the universe in general. He sees that the organic world is governed in much the same way as is the inorganic, the laws of cosmic evolution becoming those of natural selection and the survival of the fittest in the struggle for existence. In a word the law of nature is the law of force both above and below the level of vital activities. He sees no other law in society, and seems irritated and annoyed at any attempt on the part of society to "interfere" with this law. Like some religious partisans who declare the absolute indestructibility of their faith, while at the same time manifesting unconcealed concern for its safety, Spencer, while quoting the maxim, *jura nature sunt immutabilia*, betrays a lively apprehension lest something be done to change them, and defends them valiantly against the schemes of ignorant "meddlers" (this word with its derivatives probably occurs a hundred times in the two volumes).

The arch offender in this line is, of course, government, which to him is scarcely a natural product. While recognizing it as such in his cooler moments, his *animus* against it is so strong as to make him treat it as something apart from the general scheme of society, a sort of interloper or parasite, that has foisted itself upon society and is using it for its own ends. In his eyes government consists of a group of ill-disposed individuals, "politicians," who have in one way or another worked themselves into power, and whose object is to deprive the people of their liberty, property, or happiness. This is expressed in such passages as this:

"Thus much of your work shall be devoted, not to your own purposes, but to our purposes,' say the authorities to the citizens; and to whatever extent this is carried, to that extent the citizens become slaves of the government."†

Or, again:

"Public departments, all of them regimented after the militant fashion, all supported by taxes forcibly taken, and severally responsible to their

* "The Man *versus* the State," p. 365.

† "Justice," p. 223.

heads, mostly appointed for party reasons, are not immediately dependent for their means of living and growing on those whom they are designed to benefit.*

These utterances clearly show that in his mind there is no bond of mutuality between the government and the citizen; that with him the former is an outside power working against the latter and for itself alone, and he declares that:

"Government, begotten of aggression and by aggression, ever continues to betray its original nature by its aggressiveness."†

As already remarked, what seems chiefly to trouble him is the attempt on the part of government to "interfere," "meddle," and "tamper" with the laws of nature, which he variously designates as "the normal working of things," "the constitution of things," "the order of Nature," "causal relations," etc., laying, of course, great stress on the law of supply and demand and the laws of trade and commerce in general. Whenever he speaks of the natural forces of society it is in this sense, for, adhering to the biological point of view, he can, of course, perceive no other social force than the struggle for existence, that is, the mere life-force. The true social forces are psychic and therefore ignored. Indeed, had he recognized them his entire course of reasoning would have been reversed, for they operate directly against the vital force, and tend to defeat the law of nature as manifested in the struggle for existence. He dimly perceives this, it is true, but mistakes the normal operations of the law of mind, antagonizing the law of life, for an abnormal element intruding upon the domain of natural law. If he could rise to a position from which he could see the whole field of both life and mind he would see that society is itself a product of the latter and could not result from the former. The same is true to an increased degree of government. It is the result of the "interference" of the psychic with the vital law. All human institutions are in the same case. Animals have no institutions. Looking deeper we perceive that it is this that characterizes all art. Everything artificial is a product of the psychic force and results from interference with "the constitution of things." "The normal working of things" would never produce tools, weapons, clothing, or shelter. It is the essence of invention and artificial construction to "meddle" with "casual relations." But all this is just as "natural" and "normal" as are the purely physical or vital processes. It simply takes place in a different department of natural forces. It is the psychic process, the work of mental agencies.

As has been intimated, Mr. Spencer recognizes the *efficacy*

* *Ibid.*, p. 231.

† "The Man *versus* the State," p. 369.

of these interferences with nature, as he is pleased to call them. He is right in denying that there is any power that can take from, or add to, the actual force in the universe. To a great degree, too, the organic force of the world is incapable of increase or diminution, and even that part of it that belongs to society is practically a fixed quantity. Only by commuting it into some other form of force can its volume be changed. But all this is beside the point. The interferences of which he complains are not attempts to create or destroy the forces of society. They are attempts to *direct* them. This is easily done. The arts are all the result of the intelligent direction of natural forces and the properties of substances into ways and shapes that are useful to man. In the domestication of animals and the cultivation of vegetables the same is done for the higher class of forces displayed by living things. Government and all other social institutions apply the same principles to the laws of human action. They are all successful in proportion to the degree of intelligence, *i.e.*, of the understanding of those forces and properties, with which they are conducted. Mr. Spencer would not discourage art, he would not decry agriculture, he does not attack any other human institution except government.

His reason for this seems to be that many of the acts of government have resulted in failure. This no one denies. But so have a large percentage of all other human schemes been failures. All social operations are primarily empirical. All have been products of multiplied experiments, and have attained success only after failure has taught wisdom. Not to speak of the abortive machines and worthless inventions that flood the patent offices of all countries, we need only to consider the business failures of modern times to see that the method of psychic progress is that of trial and error, at least in the earlier stages of every department of social life. If permitted to go on success is ultimately achieved and progress is made. It has been so in all the lower efforts, and it has been so in that highest effort, that of society to govern itself. Mr. Spencer's sociology, therefore, which would minimize government to the utmost, and even hints at its ultimate elimination, is an essentially destructive, and in no sense a constructive system. His political ethics which denies the right of society to adopt ways and means for its own improvement and advancement, is a censure of the whole course of human history.

A large part of the matter of the works now under consideration consists of enumerations of cases of governmental failure. Most of these cases are drawn from the history of European nations a century or more ago: the laws and ordinances interfering with trade and commerce, class legislation, sumptuary laws and laws fixing prices, wages, etc., mischievous and meddlesome

legislation, laws that missed their purpose, produced unexpected effects, or the opposite effect from the one intended, laws that have had to be repealed, etc., etc. He has accumulated a mass of facts of this class that are highly interesting, often amusing, and certainly valuable as historical knowledge if not as guides to future lawmakers. But the fact that there is no longer any such legislation shows that these methods, however successful once, are not valued now and would not be tolerated. The failures, in so far as they were such, have taught their lesson and served their purpose in the great school of political experience. His claim that there is danger of reverting to such methods is simply puerile. The cases that he adduces of more modern legislation are of a very different class, and while some of the acts he enumerates are doubtless unwise and short-sighted, and will be repealed, the general body of legislation that he condemns is not only approved but demanded by the moral sense of Europe and America. Such is the anti-child-labor legislation, short-hour legislation, factory legislation, sanitary legislation, appropriations for public works, regulation of railways, public management of the telegraph system, the parcels post, and above all public instruction or national education. All of these and many other measures, some of them long since adopted on the Continent, now popular in England or America or both, he condemns in the most unmeasured terms as mischievous and pernicious, and as contrary to his canon of justice, the law of equal freedom. If anything further were needed to prove that canon unsound this fact would do so: that it stands in the way of the accomplishment of an urgent social demand.

Aside from the one glaring omission of Mr. Spencer's system, already pointed out—the omission of the psychic factor—and aside from many minor ones which cannot be noticed here, there are two other important omissions which call for special mention. The first of these is the failure to perceive that modern governments are all, to a greater or less degree, representative, and that their acts are consequently not wholly those of the individuals that make up the governing body at any given time, but are in a certain correct sense the acts of society. He has himself admitted that all governments, even the rudest, reflect the state of society over which they hold sway. But in an enlightened social state, such as that of England, Western Europe, and the United States, there is a close bond of union between society and the government. Whether they call themselves monarchies or republics, they are all in fact impure democracies, and the legislators and principal administrative officers are chosen by the people, or change with the changes in the popular voice. Such governments are controlled, after their selection as much as in their selection, by the wishes of their constituents. They are watched and warned and urged and petitioned, and their

continuance depends upon their obedience. Rarely, indeed, do they dare to disobey the known will of the people. This being so, the anathemas of Herbert Spencer upon the *personnel* of government are misdirected. "The sins of legislators" are the sins of voters, and his plea should have been made to the wider tribunal. His counsel of "resistance"* is based on the assumption that the government is doing some great wrong, but those who are advised to resist are themselves the wrongdoers, and are not likely to resist their own acts. His denial of the right of majorities to legislate for minorities might be discussed in this connection, but it scarcely seems worth while to go over such well-beaten ground.

✧ The second of the omissions under consideration is even more serious than the first. It is the failure to observe that the evils from which modern governments are called upon to protect society are of a very different nature from those with which the earlier governments of the world had to contend. A great change in the groundwork of society, due to various obscure causes working together during long periods, is always difficult to perceive, and the new evils thus insidiously introduced are hard to eradicate because they require the application of new and unaccustomed remedies. Such is the present state of society in the most advanced nations. Protection, which is the only governmental function that Mr. Spencer will recognize as legitimate, formerly meant the redress of private wrongs to person and property, chiefly through physical causes. Under autocratic governments with limited industrial operations these were the chief internal evils of society, except those caused by the rapacity of the governing class. Competition prevailed almost exclusively in all branches of business, causing its share of the individual crime which it was the duty of government to prevent or punish. But a great revolution took place in Western Europe, and the character of governments underwent a complete change, often without change of name. Power passed from the hands of the ruling class into those of the people, and the most intense jealousy of all government interference in private business became general. The laws of trade were respected by the State and were allowed to operate untrammelled. This was an immense relief, and an era of unexampled industrial prosperity ensued. Wealth was rapidly accumulated, but in this reign of natural law in society it was drawn toward the strongest centers of attraction. The only justice respected in the distribution of wealth was the kind that Mr. Spencer alone recognizes. Under this crude form of justice the distribution was correspondingly unequal. Then came the era of machinery and the breaking up of guilds and trades, unsettling the status of the artisan, and turning him adrift to take his chances in

* "Social Statics, Abridged and Revised," p. 184.

the universal competition. These facts are familiar to all economists and students of real history. The industrial condition of the world has completely changed. The evils to be dealt with now are of an entirely different class from those of former industrial epochs. States have recognized this, and whatever differences may exist as to methods, all governments have felt called upon to take some action for the protection of society from these new dangers. The workingman has a voice in government, and its acts are largely his doings. Mr. Spencer, often as he condemns the "great man theory" of history, seems not to have correctly read the real history of his own age. He still thinks that the natural forces of society can be safely left to take care of themselves. And when he sees the State moving steadily forward and grappling one by one with these new evils, he sees in it the ghost of bygone despotism, and imagines a return to sumptuary laws, to the corn laws, and the *corvée*. He thinks the world gone mad, and works himself up into something like a frenzy. Because people will have public schools he cries out:

"We have fallen upon evil times, in which it has come to be an accepted doctrine that part of the responsibilities are to be discharged not by parents but by the public—a part which is gradually becoming a larger part and threatens to become the whole. Agitators and legislators have united in spreading a theory which, logically followed out, ends in the monstrous conclusion that it is for parents to beget children and for society to take care of them. The political ethics now in fashion makes the unhesitating assumption that while each man, as parent, is not responsible for the mental culture of his own offspring, he is, as citizen, along with other citizens, responsible for the mental culture of all other men's offspring! And this absurd doctrine has now become so well established that people raise their eyebrows in astonishment if you deny it. A self-evident falsehood has been transformed into a self-evident truth!"*

Because new countries will protect their infant industries, he lectures them in the following style:

"While the one party has habitually ignored, the other party has habitually failed to emphasize, the truth that this so-called protection always involves aggression; and that the name aggressionist ought to be substituted for the name protectionist."†

To the Liberal Party in England, because it has continued the "mischievous legislation" begun by the Tory Party, he applies the name of the "The New Toryism," and says:

"The function of Liberalism in the past was that of putting a limit to the powers of kings. The function of true Liberalism in the future will be that of putting a limit to the powers of Parliaments."‡

In defence of his abstract principle of political ethics he thus arraigns the existing practices of States:

* "Principles of Ethics," vol. i., p. 545.

† "The Man *versus* the State," p. 369.

‡ *Ibid.*, p. 411.

"By those who have been brought up in the reigning school of politics and morals, nothing less than scorn is shown for every doctrine which implies restraint on the doings of immediate expediency or what appears to be such. Along with avowed contempt for 'abstract principles' and generalizations, there goes unlimited faith in a motley assemblage of nominees of caucuses, ruled by ignorant and fanatical wire-pullers; and it is thought intolerable that its judgments should be in any way subordinated by deductions from ethical truths."*

Although Mr. Spencer occasionally manifests some faith in the ultimate triumph of what he considers sound principles, his latest works, upon the whole, are pervaded by a tone of despair, and sound more like the wail of a Tacitus over a crumbling empire than the firm voice of a philosopher who is making an epoch. He calls everything that he does not approve of "socialism," at the spread of which he is thoroughly alarmed. In one of the foot-notes to the revised "Social Statics" (p. 209), he says:

"At that time no one dreamed that the advance of Socialism would be so rapid that in forty years municipal governments would make rate-payers pay part of the rents of working-class houses; for this is what is done when by public funds they are supplied with better houses than they would otherwise have."

And in the preface to "*The Man versus the State*," referring to a prediction made in 1860, he indulges in the following jeremiad:

"Reduced to its simplest expression, the thesis maintained was that, unless due precautions were taken, increase of freedom in form would be followed by decrease of freedom in fact. Nothing has occurred to alter the belief I then expressed. The drift of legislation since that time has been of the kind anticipated. Dictatorial measures, rapidly multiplied, have tended continually to narrow the liberties of individuals; and have done this in a double way. Regulations have been made in yearly-growing numbers, restraining the citizen in directions where his actions were previously unchecked, and compelling actions which previously he might perform or not as he liked; and at the same time heavier public burdens, chiefly local, have further restricted his freedom, by lessening that portion of his earnings which he can spend as he pleases, and augmenting the portion taken from him to be spent as public agents please. The causes of these foretold effects, then in operation, continue in operation—are, indeed, likely to be strengthened."

In his "Coming Slavery" he completes this dire picture in a way that even Edward Bellamy ought to be satisfied with:

"Already exclusive letter-carrier, exclusive transmitter of telegrams, and on the way to become exclusive carrier of parcels, the State will not only be exclusive carrier of passengers, goods, and minerals, but will add to its present various trades many other trades. Even now, besides erecting its naval and military establishments and building harbors, docks, breakwaters, etc., it does the work of ship-builder, cannon-founder, small-arms maker, manufacturer of ammunition, army-clothier and boot-maker; and when the railways have been appropriated 'with or without compensation,' as the Democratic Federa-

* "Justice," p. 49.

tionists say, it will have to become locomotive-engine-builder, carriage-maker, tarpaulin and grease manufacturer, passenger-vessel owner, coal-miner, stone-quarrier, omnibus proprietor, etc. Meanwhile its local lieutenants, the municipal governments, already in many places suppliers of water, gas-makers, owners and workers of tramways, proprietors of baths, will doubtless have undertaken various other businesses. And when the State, directly or by proxy, has thus come into possession of, or has established, numerous concerns for wholesale production and for wholesale distribution, there will be good precedents for extending its function to retail distribution: following such an example, say, as is offered by the French Government, which has long been a retail tobacconist.”*

Finally, in his “Postscript” to this same work, he abandons hope in the following language:

“Do I expect this doctrine to meet with any considerable acceptance? I wish I could say, yes; but unhappily various reasons oblige me to conclude that only here and there a solitary citizen may have his political creed modified.”

And no wonder, when we consider what the adoption of his “political creed” would involve. Not only would it involve the repeal of all the humane and industrial legislation to which reference has been made, but it would abolish all public works, including lighthouses and harbors; it would necessitate a return to a private postal system which the whole world has outgrown; would reestablish the monopoly telegraph in those countries which have replaced it by a national telegraph, always found to possess advantages similar to those of a national mail system; the parcels post of England and equivalent systems of the Continent would give way to our express monopolies, which Mr. Spencer extols because he does not understand them; it would turn over cities to private water companies and private fire companies, both types of the “natural monopoly;” there would be a reversion to a system of strictly private, or “wildcat” banking; public schools would be abolished, probably the last thing next to liberty that any enlightened nation would surrender; and all forms of sanitary regulation, including quarantine precautions against great epidemics, would be left to the wisdom of individual citizens. As this last seems to cap the climax of *laissez faire* absurdity, it may be well to listen to his statement of the case, although the reader may require to be assured that the following passage is not intended as a burlesque:

“Respecting sewage there would be no difficulty. Houses might readily be drained on the same mercantile principle that they are now supplied with water. It is probable that in the hands of a private company, the resulting manure would not only pay the cost of collection, but would yield a considerable profit. But if not, the return on the invested capital would be made up by

* “The Man *versus* the State,” p. 327.

charges to those whose houses were drained: the alternative of having their connections with the main sewer stopped, being as good a security for payment as the analogous ones possessed by water and gas companies."*

According to Mr. Spencer's political ethics the State has no right to prevent the adulteration of food or the deterioration of fabrics, and he says that "the interest of the consumer is not only an efficient guarantee for the goodness of the things consumed, but the best guarantee."†

The process known as "cornering the market" is strongly approved by him as the natural method of regulating the supply. Of it he says:

"There still survives alike amongst rich and poor the belief that the speculations of corn-dealers are injurious to the public. Their anger blinds them to the fact that were not the price raised immediately after a deficient harvest, by the purchases of these large factors, there would be nothing to prevent the people from consuming food at their ordinary rate; which would end in the inadequate supply being eaten up long before the ripening of the next crop. They do not perceive that this mercantile operation is analogous in its effect to putting the crew of a vessel on diminished rations when the stock of provisions is found insufficient to last out the voyage."‡

The person who performs the office of mediator in this operation, and, he forgets to say, also reaps the profits, "is simply one whose function it is to equalize the supply of a commodity by checking unduly rapid consumption."§

He has the most unbounded faith in the "contract," and considers all modern society to rest upon that. Whatever two persons agree to, he considers as *ipso facto* just; but, as a matter of fact, all contracts under a monopolistic régime are unequal in varying degrees. Competing labor is everywhere compelled to contract on unequal terms with combining capital, and no power short of that of society itself, *i.e.*, the State, can prevent this condition of things. The strongest argument the socialist has for the State's undertaking industrial enterprises is that it is the only employer that can compete with private capital in compelling just and equitable contracts.

But there is a still more serious charge against the political ethics of Herbert Spencer. "In a popularly governed nation," he says, "the government is simply a committee of management;"** yet he denies to that "committee of management" the right to manage the business of society. This would be a singular state of things in any corporate enterprise conducted by business men. And why, forsooth, has not that great corporation, society, the same right to choose its directors and instruct them to manage its business that smaller corporations have?

* "Social Statics, Abridged and Revised," p. 218.

† *Ibid.*, p. 163.

‡ *Ibid.*, p. 104.

§ "The Man *versus* the State," p. 339.

** *Ibid.*, p. 410.

In dealing with Mr. Spencer's works on the plan here adopted a reviewer is necessarily open to the charge that important omissions have been made, and that counter passages might be selected to offset many of those that have been quoted. This is freely admitted, and it is only claimed that such a review correctly represents the general tone and tenor of the treatment by the author. Large subjects are, of course, necessarily left untouched, being beyond its scope, which does not claim to be general. It therefore remains to be confessed that not only is there much in these volumes which is sound, important, and deeply philosophical, but that they also contain many passages, which, singled out, would seem to reverse the general conclusions at which the author arrives. His numerous admissions of the necessity, value, power and progress of government,* taken in connection with his denunciations of it, amount to a positive inconsistency, and mutually weaken each other, tending to leave the merely inquiring reader in a state of doubt and confusion. But all this is independent of his unintentional admissions of the efficacy of government, involved in his arraignment of legislators for meddling and tampering with the indestructible and unchangeable laws of nature. These are simply cases of bad logic, and may be fittingly called boomerang arguments. The following will serve as an example:

"If the political meddler could be induced to contemplate the essential meaning of his plan, he would be paralyzed by the sense of his own temerity. He proposes to suspend, in some way or degree, that process by which all life has been evolved."†

And he goes on fairly to admit that this great natural process can be suspended by such an unscrupulous person, and to manifest great concern lest it actually be done. But he never asks the question why, if legislative interferences can accomplish such wonders for evil they might not occasionally accomplish some good. He says that "natural causation has been traversed by artificial hindrances,"‡ but never mentions the innumerable cases in which artificial causation has "traversed" natural hindrances, as is done every time a river is made navigable by dredging its channel, the "causation" being usually in the form of "an appropriation." His admissions show how he inwardly recognizes that government has accomplished the greatest good by rendering social progress possible. Why not, then, include governments among the things to be "let alone."

But his inconsistencies do not stop here. He goes to the absurd length of maintaining that one of the chief duties of government is to mould and modify character. He says:

* See the "Principles of Ethics," vol. i. p. 294; "Social Statics, Abridged and Revised," pp. 117, 246-47; "The Man *versus* the State," pp. 394, 406, 415.

† "Justice," pp. 259-60.

‡ "The Man *versus* the State," p. 343.

"There is indeed one faculty, or rather combination of faculties, for whose short-comings the State, as far as in it lies, may advantageously compensate—that, namely, by which society is made possible. It is clear that any being whose constitution is to be moulded into fitness for new conditions of existence, must be placed under those conditions. This granted, it follows that as man has been, and is still, deficient in those feelings which prevent the recurring antagonisms of individuals and their consequent disunion, some artificial agency is required by which their union may be maintained. Only by the process of adaptation itself, can be produced that character which makes social equilibrium spontaneous. And hence, while this process is going on, an instrumentality must be employed, firstly, to bind men into the social state, and secondly, to check all conduct endangering the existence of that state. Such an instrumentality we have in a government."*

In another place he says that "the end which the statesman should keep in view as higher than all other ends is the formation of character."†

And again:

"It should be inferred that among social causes, those initiated by legislation, similarly operating with an average regularity, must not only change men's actions, but, by consequence, change their natures."‡

This is claiming far more for legislation than the most sanguine socialist would admit. It may be justly argued, is, in fact, abundantly proved in practice, that a thorough system of public instruction exerts an immense influence upon the character of a people. It may also be regarded as proved that the social effect of protection in new countries with undeveloped resources is civilizing and elevating in diversifying industry and creating centers of population and culture. But these instrumentalities and all others that tend indirectly to modify character, are condemned by Mr. Spencer; yet he seems to think that a race may be morally transformed by government in merely preventing the individual members from cheating and assaulting one another. Such faith far exceeds that of the firmest believer in "the great political superstition."

Along with the growing impatience at the supposed wayward course of mankind, there is also perceptible, in comparing Spencer's earlier with his later writings, a gradual dying out of his warmer and more sympathetic impulses, which at the beginning of his career, made him the friend of all who suffered from the effects of an imperfect social state.§ This is especially noticeable in his attitude toward the working classes, often forced out of employment by the agencies above enumerated. Latterly we find him making the common assumption of unthinking optimists that poverty, idleness, etc., are the necessary results of personal defects, and characterizing the unemployed as

* "Social Statics, Abridged and Revised," pp. 126-27.

† "Justice," p. 251.

‡ "The Man *versus* the State," pp. 355-56.

§ Compare "Social Statics, Abridged and Revised," p. 97 ff.

"simply good-for-nothings."* Trades unions are said to "carry on a kind of industrial war in defence of workers' interests *versus* employers' interests,"† and to embrace "a permanent body of tramps, who ramble from union to union."‡ His idea of "worth" never rises above the mere animal attribute of fitness to survive, and he defends the law of equal freedom on the ground that "there is maintained the vital principle of social progress; inasmuch as, under such conditions, the individuals of most worth will prosper and multiply more than those of less worth."§ His growing aristocratic leanings are further revealed in allusions to "the not-very-wise representatives of electors who are mostly ignorant,"|| and to the rule being exercised "not so much by the collective wisdom as by the collective folly,"** and when he says "not only that these unguided judgments are very likely to be wrong, but also that there must exist some guidance by which correct judgments may be reached,"†† it becomes clear that the "guidance" referred to can be none other than the political ethics of Herbert Spencer.

Notwithstanding the vulnerable character of so large a part of Mr. Spencer's reasoning, he argues with such an air of confidence that only critical readers are likely to suspect the *ex parte* nature of his statements. The following example reminds one strongly of the oracular responses from Delphi, and may be commended to him as quite as likely to apply to his own opinions as to the opinions of others:

"Men of the past quite misunderstood the institutions they lived under. They pertinaciously adhered to the most vicious principles, and were bitter in their opposition to right ones, at the dictates of their attachments and antipathies. So difficult is it for man to emancipate himself from the invisible fetters which habit and education cast over his intellect; and so palpable is the consequent incompetency of a people to judge rightly of itself and its deeds or opinions, that the fact has been embodied in the aphorism—'No age can write its own history.' If we act wisely, we shall assume that the reasonings of modern society are subject to the like disturbing influences. We shall conclude that, even now, as in times gone by, opinion is but the counterpart of condition. We shall suspect that many of those convictions which seem the results of dispassionate thinking, have been nurtured in us by circumstances. We shall confess that, as heretofore, fanatical opposition to this doctrine and bigoted adhesion to that, have been no tests of the truth or falsity of the said doctrines; so neither is the strength of attachment nor dislike which a nation now exhibits toward certain principles, any proof of their correctness or their fallacy."‡‡

Upon the whole, it may be considered as in the highest degree unfortunate and discouraging that almost the first prominent system of sociology, as distinct from political economy, should

* "The Man *versus* the State," p. 303.

† *Ibid.*, p. 328.

‡ *Ibid.*, p. 304.

§ *Ibid.*, p. 409.

|| "Justice," p. 257.

** *Ibid.*, p. 217.

†† *Ibid.*, p. 238.

‡‡ "Social Statics, Abridged and Revised," pp. 80-81.

proceed from so low and so narrow a standpoint as virtually to constitute a protest against all attempts to deal scientifically with the subject. It is simply a wet blanket on the enthusiasm of all who would follow social science. It throws over it the dismal pall that fell on political economy, and it stamps it with the words: No future! If this is all that Herbert Spencer can make of it, what can lesser lights hope to accomplish?

It is simply astonishing that the great exponent of the law of evolution in all other departments should so signally fail to grasp that law in this highest department. And it furnishes a curious parallel that, just as he failed to perceive the fundamental difference between cosmic and organic evolution, and the coöperation in the latter of the radiant with the gravitant forces* in the production of the phenomena of life, so he has likewise failed to perceive the equally fundamental difference between vital and psychic evolution, in the latter of which the power of feeling under the direction of thought has furnished to the evolutionary process an entirely new dispensation. In seeking to bring all the products of evolution—worlds, plants, animals, man, society—under one uniform law, adequate only to the lowest, and ignoring the new and powerful principles that came forward at the several successive cosmical epochs, he has dwarfed the later of these into relative insignificance, and instead of carrying his system up symmetrically and crowning it with the science of man, he has tapered it off and flattened it out at the summit, degrading that noblest department to the level of political controversy and wholesale personal censure. The name of “administrative nihilism,” by which Professor Huxley long ago so happily characterized this, is likely to abide, and the extreme *noli tangere* individualism with which the entire social philosophy of Herbert Spencer is permeated, must, in spite of all disclaimers,† impart to it the character of a gospel of inaction.

* *Popular Science Monthly*, Vol. XI, October, 1877.

† “The Man *versus* the State,” p. 418.

January, 1894—Ætat. 52.

356. A Monistic Theory of Mind

History.—Written July 30 to August 6, 1893. This paper grew out of my much more extended lecture entitled: *Status of the Mind Problem*, delivered before I wrote this, but which appeared sometime after it. That lecture itself grew out of an earlier unpublished paper, and the history of the whole subject will be given under the lecture (see *infra*, No. 357). What is said here relates specially to this paper and will be better understood when the details are known.

I had been having some correspondence with Dr. Paul Carus, Editor of the *Monist*, and had discussed with him my views about mind. In a letter dated March 14, 1893, he had asked me to send him an article on the subject to be published in the *Monist*. I wrote my lecture soon after that, and it was delivered on April 8, and not knowing how I should publish it, still realizing that it would be much too long for an article in the *Monist*, I proposed to condense it and send it to him. This proposition he accepted April 13, and said I could make it 4,000 words. For reasons which will appear later I did not get it ready at that time, but awaited events, and finally concluded to write a different article, using only portions of the lecture, and adding one illustration. To adapt it to the *Monist*, I gave it the above title. It contained 4,800 words and two illustrations. I sent it as soon as it was finished, and in a letter dated August 15, Dr. Carus accepted it and remarked, "our views of monism are different." After I had read and returned the proof early in October he wrote me October 9, on various matters and again said: "Our views on monism are different, and I intend, either in the same or in some subsequent number, to publish a brief

article stating my own view which would show the difference." His article appeared in the same number and is entitled *Monism and Henism*. It is a criticism of mine and another that I have not read. He claims that his own is the true *monism* and the rest is *henism*. But he does not define henism and the word does not seem to have been accepted by lexicographers. I find it only in the Supplement to the Standard Dictionary, defined as: "Same as monism." My monism is about the same as Haeckel's, a unitary world-conception, and in some of his letters Dr. Carus recognized this but rather objected to Haeckel's view. I could not help feeling that his article was scarcely serious and revealed a tendency to pun on the word henism, as if the views of all but himself belonged to a sort of hen-philosophy. It certainly was not dignified. But in a letter dated January 10, 1894, *i.e.*, after the appearance of the January number of the *Monist*, he says:

"Our differences are not of a physiological but of a philosophical nature, and I believe they can be removed by patient analysis. I have not the slightest doubt that I shall come to an agreement with Prof. Haeckel as soon as I shall find again a chance to discuss our differences orally. As to the difference between yourself and me, I believe, too, that an oral discussion would more quickly bring us to a mutual understanding than the continuance of our discussion."

The Monist, Chicago, Vol. IV, No. 2, January, 1894; pp. 194-207, fig. 1 on p. 201, fig. 2 on p. 204.

February 26, 1894—Ætat 52.

357. Status of the Mind Problem *

History.—Written March 22 to April 8, 1893. Under the last head I promised to give here the full history of this paper and of that, together with the antecedents and consequents of both. The subject is the most vital to my whole philosophy that I have ever attacked, and may be said to form its very warp. I had written my *Psychic Factors of Civilization*, and it was passing through the press, and the nature and origin of mind had engrossed my entire thought. Down to the beginning of 1893 all the societies to which I belonged in Washington were purely scientific. Even in the Philosophical Society the word "philosophical" was taken in the same sense that it was in England in the eighteenth century, and none but scientific papers were ever presented. But there were a few persons there who understood philosophy in the still older sense of Plato, Aristotle, Kant, Hegel, and Sir William Hamilton. These few persons conceived the idea of forming a philosophical society in this sense. On January 16, 1893, a call was issued to this effect, signed by Dr. William T. Harris, the great Concord philosopher, then U. S. Commissioner of Education, Dr. James C. Welling, President of Columbian University, Dr. Lee Davis Lodge, Professor of International Law, and Dr. J. Macbride Sterrett, Professor of Philosophy in the same institution, now the George Washington University, which is my own *alma mater*. The call was sent to me, and the first or preliminary meeting was to be on January 20. I attended and helped to found the Society for Philosophical Inquiry, which still exists. The question as to what should be the first subject for discussion

* A Saturday lecture delivered in the lecture-hall of the U. S. National Museum, under the auspices of the Anthropological Society of Washington.

came up at the preliminary meeting and several were discussed. I proposed this question: *Is Mind a Substance or a Relation?* and it was unanimously adopted. The first regular meeting was set for January 24, and I went prepared to open the discussion. It was voted to continue the subject on January 31. I had then drawn it up in systematic form with a large number of distinct heads to which I gave numbers. It was decided to continue the discussion and take it up by heads, and some of the heads were specially referred to particular members. I then proceeded to perfect the paper and it finally consisted of fifty-four distinct propositions logically arranged and numbered. I next had it typewritten and then hectographed, making thirty-two copies. These I took to the meeting on February 7, and distributed them to the members. It formed the subject of that meeting and many of the special topics were taken in charge by different members and brought before subsequent meetings under various forms.

As that paper constitutes the basis of a series of later ones, and as it never was published in the form in which I presented it, and, moreover, as I still stand by all the several propositions, and have worked them into my books and my entire philosophy, it seems proper that it should now be published in its original shape for its biographical value, if for no other reason. I therefore introduce it here:

(Opening a discussion before the Society for Philosophical Inquiry, Washington, D. C., Jan. 31, 1893).

[Each distinct proposition is made a paragraph and numbered with a view to separate discussion].

1. Time, space, and motion are the conditions of being.
2. All other things are either substances or relations conditioned in time, space, and motion.
3. Relations subsist between substances, so that the latter are said to possess the former.
4. Phenomena are the effects which substances in their various relations produce upon the senses of sentient beings.
5. All relations fall into three general classes: co-existence, sequence, and movement.
6. These are called respectively extensive, protensive, and intensive relations.
7. The first relates to space, the second to time, the third to causality.
8. All substances possess at all times all of these relations. That is, all substances are at all times in space, in time, and in motion. In other words,

all substances are at all times changing their position in space which always occupies time.

9. If there were but one element of substance this would sum up its entire history. But the discrete elements of substance are innumerable, perhaps infinite in number.

10. They are in close proximity to one another.

11. Their inherent motions are constantly converting this proximity into *contact*, and the act of coming into contact is *impact*.

12. Impact modifies all the relations, extensive, protensive, and intensive, of impinging elements, that is, it changes their motions as to both space and time.

13. Motion as to space is called *direction*.

14. Motion as to time is called *velocity* or *rate*.

15. For motion in one direction the rate or velocity is equal to the space or distance divided by the time ($v = \frac{s}{t}$).*

16. In case of impact the effect is equal to the quantity of substance multiplied by the rate of motion.

17. This constitutes the *momentum* of the body and measures the *force* that it exerts.

18. As the quantity of substance represents the *mass*, and the rate of motion the velocity, the force is equal to the mass multiplied by the velocity ($f = mv$).†

19. This is the formula for the degree of *causality*, and results in the production of *phenomena*.

20. All the differences that exist in the nature, *i.e.*, in the appearance, of different substances are due to differences in the mass, direction, and velocity of their elements, producing correspondingly varied effects through impact and resulting in manifold phenomena.

21. The different effects produced by different substances constitute their *properties*, which are therefore one and the same with their *relations*.

22. They are not essences, independent existences, or entities.

23. Although they produce phenomena which are all that the senses can perceive of the substances which manifest them, they are not the substances themselves, which are transcendental and can only be known by the reason, which demonstrates their existence.

24. All known substances fall under three general heads, *viz.*, chemical elements, inorganic compounds, and organic compounds. For these I have proposed the following "cosmical definitions":

25. "*Chemical Elements*.—Substances whose molecules are composed either of those of other chemical elements of less atomic weight, or of such as are too low to be capable of molar aggregation, and therefore imperceptible to sense: formed during the progress of development of star-systems at temperatures higher than can be artificially produced, and hence too stable to be artificially dissociated."

26. "*Inorganic Compounds*.—Substances whose molecules are composed of those of chemical elements or of other inorganic compounds of lower degrees

* Smith's *Mechanics*, p. 132.

† Op. cit., p. 137.

of aggregation: formed in the later stages of the development of planets at high but artificially producible temperatures, and therefore capable of artificial decomposition; and constituting the greater part of the solid crust of cooled-off bodies, their liquid, and a portion of their gaseous envelope."

27. "*Organic Compounds*.—Substances whose highly complex and very unstable molecules are composed of those of chemical elements, inorganic compounds, or organic compounds of lower organization: formed on the cooled surfaces of fully developed planets at life-supporting temperatures."*

28. I have also shown† that it is a general law that the properties of substances are more active as their composition is more complex; which seems to be the result of the process of recompounding as indicated, whereby the lower states enter as units of aggregation into the higher, and that, finally, when the complex protein compounds whose chief properties are instability and isomerism, enter into further combination protoplasm results, whose chief property is *motility*, or spontaneous movement.

29. As in all lower states there is inherent or spontaneous movement among their molecules, this step is nothing more than the fact that the enormously complex molecules of protoplasm become perceptible to the faculties. In other words *molecular* motion is converted into *molar* motion.

30. But motility, or spontaneous motion, is the essential thing in life; it ~~is~~ life and all of life. All other vital phenomena are the results of organization as brought about by this life principle. No one now believes in a life-entirety or Archæus. This is always spoken of as an exploded doctrine.

31. Life, then is a *relation*, not a substance. But life, at least that of plastic organisms, could not exist without feeling. Feeling is a condition to the existence of plastic organisms. Something is required to incline the creature to shun danger and seek nutriment.

32. This something is *sentientcy* and sentientcy is the primal element of mind.

33. It is an essential concomitant of motility and must inhere in all protoplasm.

34. It is no more abnormal or unaccountable than spontaneous mobility, and there is no more reason to suppose that an outside element intervened between life and mind than that such an element intervened between albumen and protoplasm.

35. The same would be true between feeling and thought, which latter is a product of intensification through the focalizing power of organization. "A brain is to a lump of protoplasm what a high pressure steam engine is to a cloud of vapor or a Ruhmkorff coil to a pith-ball."‡

36. The properties of substances are the ways in which substances produce effects. They are not independent essences capable of quitting the substances manifesting them and producing effects of their own. If they ever seem to be such, as in the case of odors, it is because discrete parts of the substances

* *Popular Science Monthly*, Vol. XVIII, New York, February, 1881, p. 539.

† *American Naturalist*, Vol. XVI, Philadelphia, December, 1882, pp. 968-979.

‡ *Dynamic Sociology*, New York, 1883, Vol. I, p. 370.

themselves separate off from the main body and diminish its mass to that extent.

37. Substances are sweet, sour, astringent, etc., only as they are brought into relation with the senses or with other substances which these properties can affect.

38. There are no such concrete things as sweetness, sourness, astringency, etc.

39. Life, feeling, and thought are precisely in the same case.

40. Life is a property of protoplasm, viz., motility.

41. Feeling and thought are *psychoses*.

42. They result from molecular waves propagated along nerves.

43. The molecular activity that takes place in the nerve structure is *neurosis*.

44. Psychosis is the property resulting *from* neurosis or molecular activity, and results *in* the phenomena of feeling and thought.

45. Psychosis is to neurosis what color is to the ethereal vibrations that produce color, or what air vibrations are to sound, or what the peculiar arrangement and activities of atoms of any kind of matter, such as iron or gold, are to the properties of those substances.

46. All properties are due to the nature and behavior of the elements of the substances which manifest them. These unknown activities are the homologues of *neurosis* and the properties are the homologues of *psychosis*.

47. The "mystery" of mind is therefore no greater than the mystery of color, of weight, of elasticity.

48. All properties are simply observed facts. We do not even know the nature of the simplest of them, viz., gravitation. We only know the phenomena and laws. The fall of a stone is as great a mystery as the conception of an idea, and I see no reason for the manifestation of awe and wonder before the one more than before the other. But as the first cannot take place without the stone, so the other cannot take place without the brain.

49. A thought merely entertained is inoperative as to other persons and other things.

50. To produce any objective effect it must find expression in some form of action by the individual who entertains it. He must either speak or write or act it.

51. He cannot "transfer" it except by some mechanical means, or through some substantial instrumentality.

52. The instrumentality by which brain works is nerve fibers in connection with muscles. By these, organs are moved and brought into causal relations with objects outside the organism. Only thus is mind related to the external world. Only thus are its relations, *i.e.*, its properties, manifested.

53. The notion of "thought transference" is based wholly on the assumption that mind is a substance and not a property or relation.

54. This therefore is the fundamental problem of psychology.

[After the reading and partial discussion of this paper the Society, on motion of Dr. W. T. Harris, ordered that it be considered item by item at subsequent meetings].

Besides supplying the members with copies of the paper I sent a number to persons whom I wished to have read it. I sent one to Dr. Schurman, who had recently founded the *Philosophical Review* and had asked me to contribute. I did not expect him to publish it and so informed him, explaining that it was not in the proper form for publication. He returned it with some criticisms on certain heads.

I had long been thinking on the subject of the relation of mind to body and had been struck by Huxley's terms *neurosis* and *psychosis*. When in December 1892 the Committee on Communications of the Anthropological Society of Washington, of which I was a member, applied to the members for the titles of papers to be read before the society during the winter, I offered to give one on the subject of *Psychosis and Neurosis*, and it was so announced in the printed circular. When, a little later, the Society proposed to resume the "Saturday Lectures" that had been discontinued for several years, and asked me to give one of them, I decided to take that subject for my lecture, and it was so announced and set for April 8, 1893. Meantime the events above described had taken place and the subject had so broadened out in my mind that I no longer regarded the original title as adequate. Before sitting down to write my lecture, therefore, I notified the Committee that I desired to have the title changed to the one it now bears, and a later announcement received on March 28, gave the corrected title.

The lecture was delivered as announced on April 8, in the great hall of the U. S. National Museum. Major Powell introduced me in a neat speech. The audience was immense, many being compelled to stand, but the attention was perfect and the lecture a great success. Dr. Baker had loaned me his large chart of the brain anatomy and permitted me to publish the figure.

The matter rested here for over a month, and I expected to send part of the lecture to the *Monist* (see the last paper), when on May 20, Mr. W. J. McGee, chairman of our Committee, wrote me that the Saturday lectures would probably all be printed in full in the *Appendix* to the *Smithsonian Report*. I told him my manuscript was ready. On June 19, he wrote again saying that provision for publishing the Saturday lectures in the *Smithsonian Report* had been completed, and asking me to send the manu-

script to the Secretary of the Smithsonian Institution at once. In fact, I gave it to Mr. McGee himself, who said he wanted it to make estimates as to cost, etc., and it found its way to the Government Printing Office through him. I had to recall it a little later to make some changes resulting from the appearance at that time of Dr. Baker's article on *Recent Discoveries in the Nervous System*, (*New York Medical Journal*, June 17 and 24, 1893), and I returned it direct to Mr. Winlock in the Secretary's office on July 19. Proofs were received on September 16, and were not disposed of till September 23, a number of changes having been made and footnotes added.

On January 13, 1894 a messenger brought me two hundred reprints of this lecture neatly covered, containing on the cover and title page the words: "From the Smithsonian Report for 1892," and at the top the number "913," which is the number in the "Smithsonian Publications." It was paged from 603 to 620. The reason for giving these apparently unnecessary details will soon appear. A few minutes after the reprints had been delivered a second messenger came and informed me that the Secretary would like to see me. I went over immediately and the Assistant Secretary, Professor G. Brown Goode, took me into his office and told me that Professor Langley had been looking over my lecture and had decided that it would not do to publish it in the *Smithsonian Report*, that it was too speculative and materialistic, that public opinion was becoming critical. He said that Mr. McGee's lecture on *The Earth as the Home of Man* was worse than mine, and both must be excluded. I confess that I had thought that my lecture belonged to a different class from that usually published in the *Appendix* to the *Smithsonian Reports*, which was the successor of a previous publication called the *Record of Scientific Progress*, and was supposed to contain nothing but a record or explanation of the chief scientific discoveries made in all departments during each year. This my lecture did not of course pretend to be. But I had said nothing, as it was no affair of mine. I therefore told Professor Goode that I fully agreed with him and Professor Langley that my lecture was not, in my judgment, adapted to the *Smithsonian Report*, and that I was more than willing that it be omitted. It was clearly a blunder in having it printed, and it now appears that it was chiefly due to Mr. McGee's active urging of the

matter as Chairman of the Committee on Saturday Lectures in the Anthropological Society. The pressure seems to have all come from him.

It happened that the connection of the lecture with the Smithsonian Institution was indicated only by the words above quoted printed on the cover and title page, and it was agreed that I might distribute my reprints if I would remove the covers and title pages. This is in reality what I did, and I have distributed them as a pamphlet. I said nothing about the affair to any one, but it became known very soon and was first all the talk in scientific circles, the Cosmos Club, etc. But the press got wind of it, and it made a fine subject to ventilate and help sell the papers. Most of the criticism was adverse to the action of the Smithsonian authorities; in fact, I did not see one item defending it. I think Professor Langley became a little alarmed from the other side, for on January 20, he sent for me and talked about the matter to me. He wanted me to put myself in his place, said that the cost of publication was borne by the United States, and that the people would disapprove of the expenditure of public funds for the promulgation of individual theories in science, but he did not give any instance in which such disapproval had been manifested. On the contrary, disapproval of his action in expunging my lecture had been strongly expressed as interference with free speech. I merely repeated to him what I had said to Professor Goode, viz., that I regarded the attempt to publish my lecture in the *Smithsonian Report* as a mistake. Several newspaper reporters approached me on the subject, but I declined to say anything whatever. I told them that I was in a sense an official subordinate of Professor Langley's, and was thus debarred from all right to discuss the subject.

Something should be said as to the nature of these press comments. There seems to have been one somewhat extended syndicate article trying to be impartial, but wholly distorting the facts. I have it from the *Washington Post* and *New York Sun* of January 22. It gives the title of my lecture as *The Physiological Basis of Mind*, and characterizes it as "materialistic," but does not devote much space to it, dwelling chiefly on Mr. McGee's lecture, in which he spelled Creator with a small *c*. It is rather flippant. The editorial in the *Washington Post*

of January 23, entitled *A Case of Church and State*, is a severe arraignment of Professor Langley for suppressing the two lectures. It says:

"It reads very much like a chapter of the fourteenth century, this announcement that the Secretary of the Smithsonian Institution has called in the entire edition of a public document in order to expurgate two papers which he does not regard as orthodox in their tendencies and implications;"

also much more in the same strain.

One of the curious results of it was that the action taken should have been condemned by a clergyman. The Rev. George Elliott, Pastor of the Dumbarton Avenue M. E. Church, wrote as follows to the same journal, and it appeared in the issue of January 26.

"After reading the mild heresies contained in the lectures of Professor Ward and Mc Gee, I am astonished that it was thought necessary to suppress these sapient lucubrations at an expense of \$10,000 or so. These papers are a most instructive example of the saving in labor which is possible in governmental science by substituting philosophical speculation for the more arduous task of scientific investigation.

"It is certainly most interesting that, just in the age when religion is putting off the garb of metaphysical dogmatism, science should be beginning to assume its cast-off robes. The real objection to the lectures is just this, that they are not scientific but theological speculations. There is nothing in them which can greatly alarm any well-informed Christian, and there is no reason why they should not be printed, with, however, the mild injunction from Professor Langley that henceforth they refrain from metaphysics."

In scientific circles the condemnation of Professor Langley was very general. Although the inside facts may never be known, I, for my own part, never held Professor Langley primarily responsible. Whatever else he was, he was not known as a churchman or one who had marked religious scruples or views. On the other hand it is well known that Professor Goode was an avowed adherent of the orthodox religious creed as he had been taught it at his *alma mater*, the Wesleyan University. That he was the one who first raised the objection and brought it to Professor Langley's attention, who otherwise would never have noticed any impropriety in the lectures appearing in the *Smithsonian Report*, I have never doubted. But of Professor Goode's perfect sincerity and high motives there is also no question.

Mr. McGee very soon arranged to have the lectures pub-

lished by the Anthropological Society, under whose auspices they were delivered, and the Smithsonian Institution turned over the electroplates to that Society for the purpose. Mr. McGee wanted the two lectures published as one "special paper" of the Society. An edition of 1000 copies of these two "special papers," together forming a "Bulletin," was thus published, each with its own separate cover, and each separately paged as a pamphlet. I received 200 of these on February 26.

Having thus 400 copies of my lecture in the two forms to distribute, I was very free with them and sent them to many whom I did not expect to be at all interested in the subject. Among such it seems that I sent a copy to Professor O. C. Marsh, the eminent vertebrate paleontologist. This must have been through inadvertence, as he was the last person in the world that I supposed would read a paper on the mind problem. But on April 17, when the National Academy of Sciences, of which he was president, was in session in Washington, as I happened to be going out of the National Museum I passed through the rotunda and observed Professor Marsh and Professor Goode sitting there engaged in conversation. I merely bowed to them as I passed, but Professor Marsh rose quickly and approaching me, said he wanted to thank me for sending him my lecture on mind. He said he had read it and regarded it as the best thing that had ever been said on the subject, that I had reached the kernel of the problem and virtually solved it. I thanked him for the compliment, and added that I was afraid all would not agree with him, saying: "Here is Professor Goode, for example, (turning toward him, who had heard all that had been said), who thinks it very bad." I shall never forget the look on Professor Goode's face, dear and adorable man that he was. A few evenings after that (April 21), when talking with Professor Marsh at the Cosmos Club, he told me that he knew nothing about the suppression of my lecture, otherwise he would not have hurt Professor Goode's feelings in the way he did.

Another person who not only received but heard the lecture was Dr. Robert E. C. Stearns, the well-known malacologist and author, who, as all who knew him were well aware, was also a man of parts, a well-read man with ideas of his own, a critical mind, and an inexhaustible fund of humor. He had done much scientific work for and in the Smithsonian Institution, but finally

retired and lived long at Los Angeles whose climate doubtless prolonged his life. His death occurred on July 27, 1909. I had known him well and heard him crack many a joke. From him I received the following communication:

"MUCH ADOO ABOUT NOTHING."

"Lester Frank, also known as Ward
Wrote a bold thesis of his own accord,
And spiked it up on the Museum door
Where many theses had been spiked before;
Then read the same to the assembled host
That listened closely, lest a word be lost.
And all were fed with Truth's substantial meat,
No husks of lies, nor thistles of deceit.
And when the reader finished, home they went,
No murmur of dispraise nor of dissent.

"Time rolled away, the paper went to press,
Then came queer signs of dubious distress,
And dire portent seemed gathering in the air,
The sword of Damocles suspended there.
Remnants of superstition like a spook,
Were resurrected by a simple book.

"Within the temple's walls of ruddy stone
Sat the great sachem, trembling on his throne!
Within the temple full of birds and clams
The learned sachem sat upon his hams.
Disturbing fears possessed his weary brain
With countless terrors following in the train.
He heard the dogs of war with furious bark.
He paused and listened, paused again to hark;
Gouger and Snap, and all the other hounds
Coming full yelp, up the Smithsonian grounds.

"He seized the book and saw full many a line
Where gleams of satire and of scorn combine,
And said: 'I heed the stench of vicious chemical
Of leaking gas or caustic phrase polemical.
'Tis plain enough, the author's heterodox,
And bats the church with many sturdy knocks.
And in his thesis there is many a smirch
Upon the sacred pillars of the church.

"Tear up the book! Rip out each cursed page,
Ere the High Priests, insane with pious rage
Come down on Science like a shower of bricks,
And knock it endwise in promiscuous fix.
Apply the torch! And as the fire ascends,
For all this heresy we'll make amends;
And as the lurid flames rise high and higher,
We'll burn the same, as on a funeral pyre;
Thus purged, the phantom's dread shall pass away,
And all be lovely as a summer day.'

"From a secret nook in the high North Tower
 An old gray owl flew silent by—
 And as he passed the funeral pyre,
 He cocked his head and he winked his eye,
 Then circled round as back he flew,
 And chuckled and called 'tu-whit-tu-who,
 A heap of smoke for a little fire.'"

It is characteristic of the loose use of words on the part of the general public in discussing such questions as this, that this lecture was universally characterized as "materialistic," although its main and avowed purpose was to show that mind is a *relation*, and therefore *immaterial*. On the other hand, the popular conception of mind as a spiritual entity, capable of an independent existence, is essentially materialistic, since this entity and spirit itself, are habitually conceived as having form, occupying space, and having the attributes of living beings. The substance, it is true, is regarded as extremely tenuous, but organized, and with the human form, so that Haeckel's saying that the popular conception of God is that of a "gaseous vertebrate"* may really be taken seriously.

Bulletin of the Anthropological Society of Washington, Washington, D. C., 1894, pp. 3-20; Special Papers of the Anthropological Society, No. 1, Washington, D. C., 1894, pp. 1-18; pamphlet originally intended to be No. 913 of the Publications of the Smithsonian Institution, and to occupy pages 603-620 of the Report of the Board of Regents for the year ending June 30, 1892, but expunged before publication.

THERE is a revival of interest in the study of the mind. A revival, I say, because it would seem that for nearly half a century the world had dropped the study of mind, and devoted itself to the study of life. For all the centuries that preceded the scientific era, mind was almost the only subject that engaged the attention of thinking men. Not to speak of the ancients or of medieval writers, the seventeenth century was the age of Hobbes, Descartes, Spinoza, Locke, and Leibnitz, while the eighteenth was that of Berkeley, Hume, Reid, and Kant. The German and Scottish schools, under the lead of Fichte, Hegel, and Schopenhauer, and of Stewart, Brown, and Hamilton, witnessed the ebb of the great psychic tide during the first third of our own century; and although the last-named of these great metaphysicians had for his motto the words, "On earth there is

* *Die Welträthsel*, Bonn, 1899, p. 332; *The Riddle of the Universe*, New York, 1901, p. 288.

nothing great but man, in man there is nothing great but mind," he was unable to prevent the world from plunging enthusiastically into the almost exclusive study of the animal and of matter. Metaphysics was abandoned, and henceforth whatever attention was given to mind was applied to its physiological side and named *psychology*. But, as already remarked, the thought of mankind has for the past fifty years been chiefly concentrated upon the problems of biology. That domain has been immeasurably enriched. First the forms of life were marshaled and scientifically classified, then the laws of their development were worked out, and finally their tissues claimed attention, as made up of various arrangements of the universal biological unit, the cell. And now it would seem that even the histological stage is past, and thought is being centered on the constitution of the cell itself—especially of the germ cell, and biologists are deep in the problem of the ultimate physiological unit or bearer of hereditary tendencies—call it *gemmule*, *plastidule*, *biophor*, or what not—in short the problem of heredity.

✓ But in the midst of this mad strife to compass the solution of the life problem the world has, as it were, unintentionally, and in spite of itself, again encountered the mind problem. It has discovered *protoplasm*, "the physical basis of life," and learned that this is the essential constituent of nerve tissue, the physiological basis of mind. It has found the point to which life and mind converge, or rather, from which they diverge, and thus laid the foundation for a study of mind as a natural outgrowth of a knowledge of the body. This method of investigating the mind is as hopeful as the old metaphysical method, which contemplated it as an uncaused and foundationless entity, was hopeless, and it is obviously this hopefulness which has produced the modern revival of interest in the study of mind of which I have spoken. As a matter of fact, we have already a large and fully equipped school of experimental psychology, and there is probably no department of science to-day in which more rapid progress in the knowledge of phenomena and laws is being made. We are, it is true, still in the primary stage of observation, experimentation, and accumulation of facts, but the broader minds are already at work upon the results, and there is great promise for the future of the science of mind.

It is not my purpose to attempt any enumeration of the substantial gains to psychology that have resulted from the modern methods of study, much less to set forth the nature of these methods. Both of these classes of information are accessible to those who take the trouble to scan the rapidly growing literature of the science. The task I have set myself is a much simpler one, but nevertheless one which is attended with difficulties—the task, namely, of stating the general problem, which, as it seems to me, our present knowledge of the mind presents for

solution. This problem involves the two questions: What is mind? and, Whence comes it?—the nature and the origin of the mind.

The older philosophies restricted the notion of mind to what we now designate as the intellect, or at most to the intellect and the senses, by means of which it was seen to communicate with the outside world. The feelings were not supposed to be any part of the mind. Certain authors, notably Spinoza, treated the affections exhaustively, but not as a preparation for the study of mind. These and the will were considered in connection with the study of ethics. By most authors the emotions and passions were looked upon as something bad, to be restrained or suppressed, while the will was invested with divine attributes, that is, with original or underived powers. There was no lack of treatises on the soul, but neither was this regarded as any part of mind. It was independent of both mind and body, and always figured in the domain of religion.

Modern psychology, as we have seen, connects the mind with the body, but it also expands the conception of mind so as to include the feelings, the will, and also the soul. A common order of treatment is to unite the senses and the intellect into one great group of psychic phenomena, and the emotions and the will into another. Even this may be shown to be illogical, and it is beginning to be recognized that the mind has no distinct departments or faculties, but is one complex group of connected phenomena. And, curiously enough, all attempts to find a single principle or ultimate fact underlying and characterizing the entire product have led in the direction of feeling and not of thought as the real basis of the mind. Indeed, it is now boldly maintained that thought itself, and every state of consciousness, is a feeling. And yet I think it can be successfully contended, theoretically at least, that sensation and perception are distinct things; that feeling and thought are in a sense the opposites of each other, not, indeed, independent, but, as it were, the obverse and reverse of one and the same coin. We can abstract the sensation in many cases from the knowledge that it gives, and we can and habitually do ignore the feeling and attend solely to the thought. Still, feeling is the primary fact, and no attempt to arrive at the nature of mind can succeed through the study of thought alone.

In predicating the dependence of mind and body, one of the first precautions to be taken is that against predicating their identity. That every mental fact corresponds to a physiological fact as its antecedent, or at least its necessary concomitant, is now a generally accepted truth. There is not a psychologist nor a physiologist who holds that the mental fact and the physiological fact are one and the same thing. The question as to the exact nature of the connection between these two facts may be

regarded as the leading problem of psychology to-day. It is therefore fitting that I should offer a few thoughts on this problem.

We are constantly hearing about the "mystery of mind," and when we inquire closely what this means we usually find that it is just this question of the real relation of mind to body. All admit that there is no resemblance between mind and body, and it is the overwhelming consensus of opinion that the connection between them is utterly inexplicable. I shall not refer to those authors who look upon the body as something essentially base, and despise matter. I shall confine myself to an exposition of the views of men who have devoted their lives to the study of matter, either in the inorganic world or as organized in the bodies of living organisms, and who have taught us the dignity and purity, I had almost said, the divinity, of the material world. Said Prof. Tyndall:

"The passage from the physics of the brain to the corresponding facts of consciousness is unthinkable. Granted that a definite thought, and a definite molecular action in the brain occur simultaneously; we do not possess the intellectual organ, nor apparently any rudiment of the organ, which would enable us to pass by a process of reasoning, from the one phenomenon to the other."*

Mr. Herbert Spencer is on record in many forcible passages. He says:

"Though accumulated observations and experiments have led us by a very indirect series of inferences to the belief that mind and nervous action are the subjective and objective faces of the same thing, we remain utterly incapable of seeing, and even of imagining, how the two are related. Mind still continues to us a something without any kinship to other things; and from the science which discovers by introspection the laws of this something, there is no passage by transitional steps to the sciences which discover the laws of these other things."†

And again:

"Can the oscillation of a molecule be represented in consciousness side by side with a nervous shock, and the two be recognized as one? No effort enables us to assimilate them."‡

Prof. Joseph LeConte holds views equally pronounced:

"I know," he says, "that much, very much, has been done recently which to many seems to identify psychology with brain physiology, and mental and moral phenomena with brain changes; and that much more will be done

* *Report Brit. Assoc. Adv. Sci.*, Part II, Transactions, p. 5. Presidential address before Section of Mathematics and Physics, of the British Association for the Advancement of Science; Norwich meeting, 1868.

† *Principles of Psychology*: sec. 56. Am. Ed., 1873, vol. I, p. 140.

‡ *Ibid.*: sec. 62. Vol. I, p. 158.

in the same direction. But when all is done,—all and more than we can possibly now imagine, we shall be no nearer the solution of the mystery of the relation of brain changes to mental phenomena than we are now. It is not a mystery which lessens, but only increases with knowledge. I do not hesitate to say that with an absolutely perfect science it would still be there, or even come out in still sharper relief. A vibratory thrill passes along a nerve-fiber, brain atoms are agitated by certain vibrations or oxidations, or what not—and, lo! there appear consciousness, thought, emotion. Aladdin's lamp is rubbed, and, lo! the Genii appear. There is just as much comprehensible causal relation between the two sets of phenomena in the one case as in the other.”*

Prof. Ladd, in his *Physiological Psychology*, † treating of memory, remarks:

“In the study of perception psycho-physics *can* do much towards a scientific explanation. . . . But for that spiritual activity which actually *puts together* in consciousness the sensations, it can not even suggest the beginning of physical explanation. Moreover, no cerebral process can be conceived of, which—in case it were known to exist—could possibly be regarded as a fitting physical basis for this unifying *actus* of mind. Thus also, and even more emphatically, must we insist upon the complete inability of physiology to suggest an explanation for conscious memory. . . . It is this peculiar claim in consciousness which constitutes the *essence* of an act of memory; it is this which makes the memory wholly inexplicable as a mere persistence or recurrence of similar impressions. It is this which makes conscious memory a spiritual phenomenon, the explanation of which, as arising out of nervous processes and conditions, is not simply undiscovered in fact, but utterly incapable of approach by the imagination. When, then, we speak of a physical basis of memory, recognition must be made of the complete inability of science to suggest any physical process which can be conceived of as correlated with that peculiar and mysterious *actus* of the mind, connecting its present and its past, which constitutes the essence of memory.”

Finally, Prof. William James, in his great work on the *Principles of Psychology*, rings new changes on this widely accepted doctrine of the mystery of mind:

“Everyone admits” he says “the entire incommensurability of feeling as such with material motion as such. ‘A motion became a feeling!’—no phrase that our lips can frame is so devoid of apprehensible meaning. Accordingly, even the vaguest of evolutionary enthusiasts, when deliberately comparing material with mental facts, have been as forward as any one else to emphasize the ‘chasm’ between the inner and the outer worlds.”‡

And after a long discussion of all the possible theories of the connection between mind and body, he concludes:

“I confess, therefore, that to posit a soul influenced in some mysterious way by the brain-states and responding to them by conscious affections of its own, seems to me the line of least logical resistance, so far as we yet have

* “Relation of Biology to Sociology;” p. 4. (Reprint from *The Berkeleian* for May, 1887, vol. XXIII, p. 123.)

† Part II, chap. x, sec. 23; pp. 556, 558.

‡ *Principles of Psychology*, vol. I, p. 146.

attained. . . . We must . . . ask ourselves whether, after all, the ascertainment of a blank unmediated correspondence, term for term, of the succession of states of consciousness with the succession of total brain-processes, be not the simplest psycho-physic formula, and the last word of a psychology which contents itself with verifiable laws, and seeks only to be clear, and to avoid unsafe hypotheses."*

These expressions may be taken as furnishing a fairly correct idea of the prevailing sentiment among those most entitled to be heard upon the relations between physiological processes in the nervous system and states of consciousness in the mind, or as Prof. Huxley has put it, between *neurosis* and *psychosis*. It would of course, be hopeless, even were any one so disposed, to attempt to stem such an irresistible tide of opinion. Such an attempt is very far from being my purpose, and no one is more free than I am to admit the essential mystery of mind. I propose simply to call in question, first the *necessity*, and secondly, the *propriety*, of emphasizing in such a vehement, and I might also say, gratuitous manner the fact that we are, and perhaps must always remain, profoundly ignorant of the primary and essential nature of mind.

First, then, as to the necessity for the constant and repeated confession of this ignorance. As it comes so largely from men who are dealing directly with one or another aspect of the material world it is calculated to produce upon the rest of mankind the impression that they are afraid of the charge of materialism, and are trying to atone in this way for the sin of devoting their lives to the study of matter, the investigation of physical phenomena and the tissues of the animal body. The way in which physicists and anatomists vie with metaphysicians and theologians in repelling even the imaginary insinuation that they accept the theory of a direct connection of mind with body suggests a feeling on their part that the latter are right in ascribing to matter and the flesh qualities that are low, earthy and base. Notwithstanding the fact that anatomists, histologists, and especially the students of the brain and nervous system have brought to light the wonderful complexity, beauty, and perfection of the animal body, and shown to what extraordinary degrees of development and refinement organization is capable of raising the materials with which it deals, there is still manifested an abhorrence at the idea that so astonishing an organ as the brain can even be the *cause* of feeling and thought. The most that will be admitted is that the latter are in some "mysterious" way correlated with the former, that they are their regular concomitants, that there is some preestablished, or at least, unexplained and unexplainable harmony between them. Prof. James, as we have seen, is loth to go even thus far, and contents himself with predicating,

* *Ibid.*, vol. I, pp. 181, 182.

in the most purely positivistic way, a "blank unmediated correspondence, term for term, of the succession of states of consciousness with the succession of total brain-processes."

Although no one supposes that there is any resemblance whatever between a state of consciousness and a brain process, all admit that the latter accompanies and corresponds to the former. Few will go so far as to concede a difference of time in the sense that would make the one the antecedent of the other, but some, like Mr. Spencer, maintain that they are the opposite sides, the subjective and objective correlates, of one and the same phenomenon. We are strongly reminded of the time when men's attention was chiefly drawn to the discussion of the question how the mind was related to the external world, all denying that there was any resemblance between the real world and the world which the mind perceives, and many insisting that there was no relation whatever between them. Some denied the existence of an external world altogether and held that everything was subjective, or wholly in the mind; while others went further and more logically denied the existence of the mind also, and arrived at pure nihilism. Finally Leibnitz brought forward his theory of the existence of both the self and the not-self which were wholly unlike and unrelated, but brought into perfect correspondence, such as they seemed to possess, by a supernatural agency at work from the beginning and resulting in a "pre-established harmony." Unsatisfactory as such a doctrine now seems, it was widely accepted in that less critical age. Speculations of this kind are now relegated to the department of psychology denominated *epistemology*, and thought is centered upon the relations of the mind, not to the outer world but to the inner world, the brain and nervous system. And in the discussion of this question we seem to have reached the Leibnitzian stage in which the world is satisfied with the doctrine of a preëstablished harmony. But is it going to remain satisfied with this? I think not.

As the question is one of reasoning from general facts within the possession of all, it is not necessary that one be a great high priest in the science of mind to entitle him to speak with regard to it. While therefore denying to any the right to speak *ex cathedra*, and making no claim to be believed beyond that which belongs to the inherent reasonableness of what I say, I venture to suggest a possible way out of the somewhat humiliating, not to say ridiculous, position in which we seem to be at the present time in relation to the mind problem.

The explanation that I would offer is none other than the simple assumption that the phenomena of mind stand in the same relation to the brain and nervous system that all other phenomena stand to the substances that produce them,—in a word, that the mind is a property of the organized body. The body, organized

as it is, with its nervous system and great central ganglion, manifests the properties which it possesses by virtue of its constitution in precisely the same way that all other substances manifest the properties resulting from their inherent nature or constitution. Every substance differs from every other in both its constitution and its properties, and no chemist doubts that the properties of any substance are due to its peculiar constitution; that is to say, the constitution of a substance is the cause of the properties it manifests.

Now, there is an important law governing the properties of substances. It may be briefly formulated by saying that the properties of substances are more active in proportion as their molecular constitution is more complex. The properties of the simpler chemical elements are very inert, those of inorganic compounds are usually much less so, their activities increasing roughly with the degree of composition, and when the organic compounds are reached we find that many of them have very active properties. The law holds for the various grades of organic compounds as we pass from the less to the more complex. The vegetable alkaloids and organic bases that furnish most of the febrifuges, narcotics, and toxics, such as quinine, narcotine, strychnine, etc., are very complex substances and possess relatively large molecules into which carbon, hydrogen, nitrogen, and oxygen all enter.

Another important law of what may be called chemical development, that is, the progress from the simpler to the more complex substances, is that increase in complexity is accompanied by decrease of stability. It is now generally believed that the chief distinction between what are called the chemical elements, which were once supposed to be the ultimate units of matter, and the inorganic compounds, is that the former are so much more stable that, unlike the latter, we are unable, by any means thus far devised, to separate them into any simpler components. They may have been formed at a time in the history of the solar system when temperatures prevailed that were higher than can now be artificially produced. Again the distinction between organic and inorganic compounds has broken down all along the line through the artificial production of so many of the latter, formerly supposed to be formed only in the alembic of organic life. But it is here that we find the greatest instability. When we rise above the organic bases of which I have spoken in the degree of chemical complexity, we encounter a group of which the molecules are relatively enormous, so large and complex, indeed, that it often becomes impossible to write their chemical formulas with any degree of certainty. These are the albuminous compounds, and the molecule of albumen itself has been estimated to contain no less than 679 equivalents, which, reduced to the standard of the hydrogen atom, would equal 4,870 of

these smallest known chemical units. And now, agreeably to the law stated, we find that the substances of this group are characterized by correspondingly great instability. As a consequence of their exalted structure their molecular activities are far more extensive and varied than those of simpler bodies. One of the principal modes in which they manifest their activities is that which is called *isomerism*, whereby a substance, without any change in the nature or number of its molecules, but by some little-understood rearrangement of them, assumes a different aspect and becomes to all intents and purposes another substance.

I will ask your patience while I very briefly state one additional principle of chemical development, necessary to be understood before we can proceed intelligently. This is what I have called the law of *aggregation* or *recompounding*. It consists simply in the assumption that in the formation of the more complex substances out of the more simple, the molecules of the lower orders enter bodily and as units into the constitution of those of higher ones. That is, they are not, or at least not necessarily, first decomposed into their simpler elements and afterwards combined to form the higher unit, but the units of the next lower order become the elements composing the molecules of the next higher. Without delaying to give examples at the earlier stages of development, we may pass at once to the albuminous compounds and suppose that albumen, with its molecules five thousand times as large as those of hydrogen, is a compound of various forms of proteine, whose molecules are some four hundred times as large as the hydrogen atoms, and that these proteine molecules remain undecomposed and combine to give to albumen the properties that it possesses. But we have reason to believe that from the molecule of hydrogen to that of albumen the process of evolution has been uniformly the same, viz., that of compounding and recompounding, of doubly and multiply compounding; in short, it has been the process of molecular aggregation. With still higher states of aggregation, therefore, we should naturally expect still higher forms of activity, still more marked properties.

What properties ought we to expect in a substance formed by the recompounding of the albuminoids? No one could predict. While we may safely predict higher properties from higher degrees of aggregation, we have no basis whatever upon which to predict the nature of these properties. In the simplest chemical reagents we can not foretell the result. We can not even say which of the three states of matter, the gaseous, the liquid, or the solid, the new compound will exhibit at ordinary temperatures. The invincible solid, carbon, when joined with oxygen, becomes a gas; the type of gases, hydrogen, when combined with another gas, oxygen, results in water, which is a solid at 32 Fahr.; the inert gas, chlorine, combined with the equally

inert liquid, mercury, becomes corrosive sublimate, which has very active properties and in no way resembles either of its components. And so we might go through the entire list. The general truth is that chemical union results in a new substance with new properties, different from and of a higher order than those of any which have united to produce it. When the highest known chemical compounds still further combine, we ought therefore to look for something remarkable. When the largest molecules whose constitution can be determined in the laboratory form themselves into higher molecular systems, we should not be surprised if the resultant substance should be an exceedingly strange and important one. The activities of all substances up to this point are molecular, but it might well be that the new compound should possess *molar activities*. At all antecedent stages of chemical development the spontaneous activity is confined to molecules; at this new and higher stage these spontaneous activities may be able to break over these bounds and manifest themselves in the mass.

Now we have a substance—its name is protoplasm—suspected of having the origin indicated, which is capable of such spontaneous movement as a mass. This wonderful property, confined exclusively to this substance, has been given the briefer name *motility*. This astonishing substance, protoplasm, whose existence was not suspected at the beginning of this century, is now known to be an abundant product of nature, to be present in every living thing and in every part of all organic beings if such part is really alive. It is this which makes it alive. Prof. Huxley has happily called it “the physical basis of life.” Not animals alone, but plants as well, have protoplasm in every living cell, and it is as active in the one as in the other. But bound up with this principle of life, and almost as a part of it, protoplasm possesses another and, if possible, still higher property. This property may be fittingly called *awareness*. Its activities are systematic and methodical. They recognize differences in their environment. As Maj. Powell, in his new psychologic terminology, would probably say, they have a “knowledge of good and evil.” In a word, they *feel*. In biologic language, protoplasmic bodies send out *feelers* to explore their environment. Protoplasm is therefore not merely the physical basis of life, it is the physical basis of mind also, and all nerve tissue which is essentially such, consists of protoplasm in some of its myriad forms. From the strictly material side, protoplasm is the essential thing in life, and it is also the essential thing in mind. There is no other element controlling either vital or psychic phenomena. When this stage of material aggregation was reached evolution ceased along this line. The new line of subsequent development has been that of *organization*, and plants and animals may be regarded simply as mechanisms for

the concentration, focalization, and intensification of the inherent powers and properties of protoplasm.

To do justice to this part of the subject would require a separate lecture, but I will ask your attention to a chart* (Fig. 1) suspended upon the screen, which exhibits a section through the cortex of the cerebrum, regarded by most physiologists and psychologists as the principal organ of consciousness and of mind in general. The little knots with irregular radiating fibers proceeding from them in various directions are the corpuscles of the brain, or brain cells, which are scattered, not wholly without order, through the general mass, from the surface of the convolutions above to the white matter below. The existence of these cells has long been known, but the nature of the thread-like processes which go out from them has only recently been discovered. Not being an anatomist myself, and yet wishing to be altogether correct on such an important point, I shall in what I say relative to these facts chiefly quote, with the permission of Dr. Baker, from an able but as yet unpublished memoir of his, which he has done me the favor to place in my hands.†

"It has long been known that a considerable portion of the cortex is occupied by large cells of a triangular outline, presenting a pointed extremity towards the exterior. These, the pyramidal cells of authors, are of great size in the so-called motor regions of the cortex—that is to say, in the central convolutions. . . . These structures have wide-reaching connections; and Ramón y Cajal, and Van Gehuchten, have much extended our knowledge. . . . It has been noted that there appears to be a direct proportion between the size of a nerve cell and the number and length of its processes. This is justified in the present instance, for there extend from these cells highly complicated processes, some of them of great length. From the apex of the cell a protoplasmic stem passes up through the superficial layers of the cortex and terminates in an arched arborescent panicle, each composed of plume-like expansions barbed with secondary spines. These panicles interlace with each other throughout the superficial layer of the cortex in the most intricate manner, forming a perfect forest of branches which, however, never anastomose with each other. . . . Besides the extraordinary appearance and peculiar situation of these cells there are reasons drawn from embryology and from comparative anatomy that indicate the probability that they are the chief agents in the psychic

* This chart was one prepared by Dr. Frank Baker to illustrate his anatomical lectures. It is an enlargement of one of the excellent figures of Ramón y Cajal in a paper entitled "Sur la Structure de l'Ecorce Cérébrale de quelques Mammifères," published in *La Cellule*, vol. VII, pp. 123-176, 3 plates, pl. ii, fig. 7.

Since this lecture was delivered Dr. Baker has published in the *New York Medical Journal* for June 17 and 24, 1893, an exhaustive review of "Recent discoveries in the nervous system," in which he has reproduced many of the most important figures bearing on the subject. Fig. 15 of that paper is the one referred to, and is here borrowed from it. (*New York Medical Journal*, vol. LVII, June 24, 1893, p. 685.)

† Since published as above stated. The passages quoted occur on page 685 of the *New York Medical Journal* for June 24, 1893, in connection with the accompanying figure.

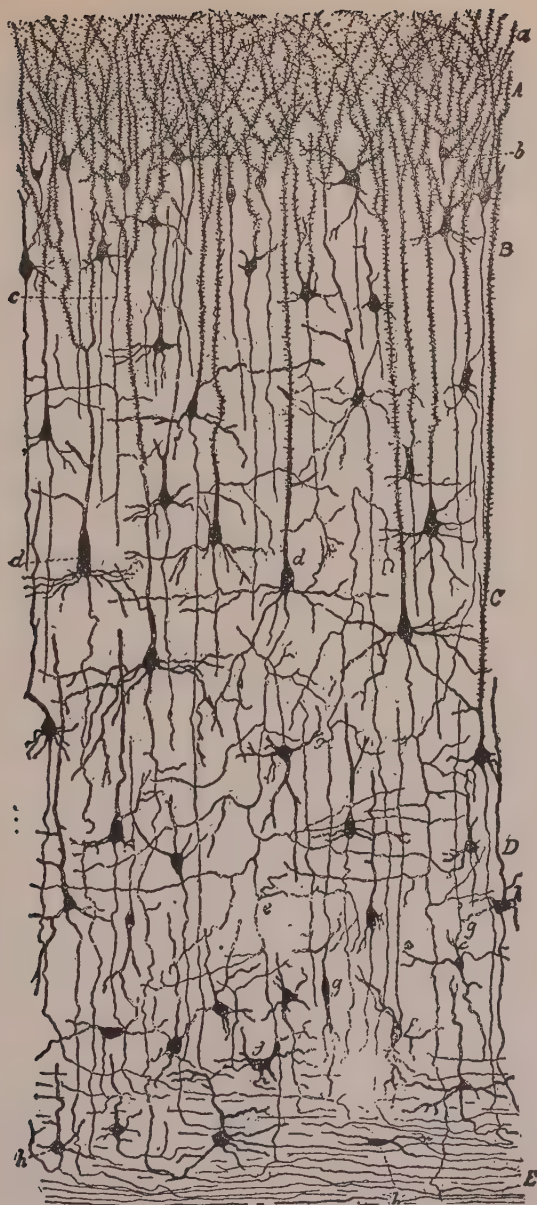


FIG. 1.—Section of the cerebral cortex (Ramón y Cajal). From the supraventricular region of a young mouse. A. Molecular layers. B. Small pyramidal layers. C. Large pyramidal layer. D. Layer of irregular corpuscles. E. White matter. *a*, panicles of the pyramids; *b*, smallest and most superficial of the pyramids; *c*, axis cylinder from a small pyramid; *d*, large pyramid; *e*, its axis cylinder; *f*, cell with ascending axis cylinder; *g*, similar but smaller cells; *h*, cells found in the white matter; *i*, rounded cell that sends its axis cylinder toward the white substance; *j*, cell with short axis cylinder process.

activity of the cortex. As we ascend the scale from the lower vertebrates to man an increasing complexity of structure is found in these cells, and there is also seen a similar progressive development when the different stages of their growth in the embryo are observed. Ramón y Cajal has therefore given to these structures the name of *psychic* cells."^{*}

As Dr. Baker indicates, the Spanish investigator lays it down as a general principle that the farther back we go in the ontogeny of the brain of mammals, that is, the younger the specimen is that is being studied, the fewer and shorter become the protoplasmic expansions, and that the same is true of their phylogeny, that is, as we descend in the scale of organization. It is probable that the failure to discover these important facts before is largely due to the circumstance that early investigations were chiefly confined to the brain of man, or of the most highly developed animals, and at adult stages, in which the processes were much too long to be either successfully traced to their ultimate terminations or brought within the field of the microscope. And I may say that this chart represents a portion of the cerebrum of a mouse at the age of one month. If it requires such a complicated brain structure to conduct the simple psychic activities of so humble a creature, what must be the structure required to conduct the psychic activities of a Newton or a Herbert Spencer?

"As a final synthesis," says Ramón y Cajal, "it may be affirmed that the human brain owes in great part the superiority of its activity, not only to the considerable number of its elements, but especially to the extraordinary richness of its means of association, that is, to the collateral branches of the axis cylinders, the protoplasmic ramifications, etc."

It will thus be perceived that in all this we are dealing altogether and essentially with protoplasm and the mechanical means of enabling it to do the maximum work. Brain cells, cellular trunks, lateral branches, plumose denticulations, axis cylinders, all consist chiefly or wholly of protoplasm.

Just as the essential thing in life is spontaneous movement, or motility, so the essential thing in mind is conscious sensibility, or awareness. Upon these as foundations the body and mind, respectively, of all living things, including man, have been built up by the organizing powers of nature. We are now only concerned with the latter, and the object in tracing these initial steps has been to show as clearly as possible wherein the great "mystery of mind" lies, about which, as shown by the passages I

* "Tal es la disposición de la célula piramidal de los mamíferos, de la que podríamos llamar, invocando su especial morfología y su exclusivo yacimiento en la corteza cerebral, *substractum* de las mas elevadas actividades nerviosas, *célula psíquica*." Ramón y Cajal: Nuevo Concepto de la Histología de los Centros Nerviosos. Revista de Ciencias Médicas de Barcelona (reprint from vol. XVIII, Barcelona, 1893, p. 27).

have quoted, the scientific world seems to be so greatly exercised. It was proposed to inquire as to the necessity for laying so great stress upon the admitted fact that we do not and perhaps never shall understand the relation that subsists between mind and body, between psychosis and neurosis, between states of brain and states of consciousness. If the progress of development has been anything analogous to what I have outlined, if mind is a property of organized protoplasm, or if any such relation subsists between mind and body as subsists between substances and their properties, then the question at once arises whether the great "mystery" has been located at the right place, and whether it would not be much more logical to locate it farther down in the scale of development, and not confine it to this one highest stage. For we are obliged to confess, with the same abject humility as we confess our ignorance of mind, that the simplest properties of the humblest forms of matter are utterly inexplicable. We know just as much about why nerves feel and brain thinks as we do about why sugar is sweet or lead heavy. Even the simplest of all physical phenomena, those of gravitation, are utterly unknown to man except as observed facts and formulated laws. He is still as ignorant of why an apple falls to the ground as he is of why he can remember that he saw it do so. Prof. James, in commenting upon Prof. Ladd's views respecting memory, says, after quoting a passage from the well-known work of the latter:

"This passage seems to me characteristic of the reigning half-way modes of thought. It puts the difficulties in the wrong places. . . . The result is various confused and scattered mysteries and unsatisfied intellectual desires. But why not 'pool' our mysteries into one great mystery, the mystery that brain-processes occasion knowledge at all?"*

I would go much further than Prof. James, and say that not only Prof. Ladd but himself as well, and nearly all those who have expressed themselves on the subject, "put the difficulties in the wrong places." And I would also go much further than he in the direction of "pooling" the mysteries. The great mystery is not merely "that brain-processes occasion knowledge," or that nerve vibrations occasion feeling, but that molecular activities should occasion any of the properties that bodies present. It is not mind alone, but matter also and equally, whose ways are beyond our powers. We can paraphrase every one of the sayings of the great men that I have quoted. Alongside of Tyndall's remark that "the passage from the physics of the brain to the corresponding facts of consciousness is unthinkable," we can put the parallel truth that the passage from the constitution of matter to the corresponding properties of matter is unthinkable.

* *Principles of Psychology*, vol. I, pp. 688, 689.

When Spencer asks, "Can the oscillation of a molecule be represented in consciousness side by side with a nervous shock and the two be recognized as one?" we may with equal propriety ask: Can the oscillation of an atom be represented in consciousness side by side with a magnetic attraction and the two be recognized as one? Prof. LeConte's brilliant comparison of psychic phenomena to the genii that spring forth when the lamp of Aladdin is rubbed is equally applicable to any kind of physical phenomena. And I fail to see why Prof. James's epigram, "motion became a feeling" is any more absurd than it is to say, "a motion became a color." Yet modern science teaches that light, which embraces all color, is "a mode of motion."

But are we, after all, so profoundly ignorant of the underlying principles of nature as all this would imply? Do we, then, know nothing of forces, and properties, and causes?

There is, it is true, a school of philosophers, the positivists, who insist that all investigation into the causes of things is wasted labor, and that science progresses solely through the study of phenomena and their laws. Comte, the founder of this school, taught that all we know or can ever hope to know is the relations that events sustain to one another; that what we call cause and effect is simply succession. There is much truth in this, but the stress which positivists lay upon the laws of phenomena contains within itself an admission of all that anyone need claim, the admission, namely, that the succession of which they speak is an orderly succession, that sequences follow antecedents in a uniform and invariable manner, so uniform and invariable that they can be depended upon absolutely; otherwise it would be impossible to arrive at any laws, and there would be no such thing as science. But this is what is meant by cause and effect. When this regular and orderly sequence is known the causes are known, i.e., the proximate causes, and all causes, however far we may trace them back, are necessarily proximate, for every cause is itself the effect of an antecedent cause, and every effect is the cause of a subsequent effect. So long, then, as the succession is perfectly invariable it is, to all intents and purposes, a succession of cause and effect, and no one claims that the series can be traced to its origin or its termination; for every series is infinite. And this is all there is of the mystery, and the ostentatious confession that scientific men make is nothing more than the confession that they are finite beings.

But the forces of nature *are* uniform and reliable. The properties of matter *are* always the same for the same substance. Bodies manifesting the same properties must be of the same internal constitution—must be the same substance. "Show me," said Bacon, "a substance that hath all the properties of gold, and let fools contend whether it be gold or no." Not less is this true of the brain and nervous system in their relations to

thought and feeling. The laws of mind are as uniform and invariable as the laws of matter. They are the laws of matter in its most highly developed form. The relation of brain-states to states of consciousness are not accidental and haphazard relations. They are rigidly fixed and invariable relations. The former are therefore the uniform antecedents and true proximate causes of the latter, and so far as we know these relations we really know the cause of mind.

I have endeavored to show that the prevailing fashion among scientific men of emphasizing the so-called "mystery of mind" is unnecessary and illogical, since mind is no more a mystery than matter, and that all that there is any ground for confessing is that, in consequence of the greater complexity of mental phenomena, due to the higher state of development of the material basis of mind, we possess as yet much less knowledge of them than we do of many of the simpler phenomena of nature. This habit can be nothing better than a relic of the old preconception in favor of the essential dignity of mind which went along with the notion of the essential unworthiness of matter—a preconception grounded in hypocrisy, in that it sought to cloak under a show of humility the egotistical pretension to divine attributes. It is therefore altogether unworthy of those who profess to be in search of truth solely for truth's sake.

I promised that I would also consider the desirability or advisability of assuming this attitude, considered independently, so far as this was possible, of its logical tenability. Of course, if the position is not a sound one this also at once condemns it from the point of view of advisability; but waiving that point, let us consider for a moment a few of the consequences to which it naturally leads. It is a well-known characteristic of the human mind to love the marvellous, to feast on the magical and occult, to hug delusions, to prefer the improbable and mysterious, and not merely to believe the impossible, but to believe it because it is impossible. The motto of science is *nil admirari* (wonder at nothing). And in the face of this known quality of the human mind it behooves men of science to guard themselves firmly against feeding this popular appetite for magic and superstition. But the moment the possibility is conceded that mind or any part of mind can have an existence separate from and independent of body, the door is opened for the crudest theories, the wildest speculations, and the most unbridled fantasies. Encouraged by such utterances as I have quoted from men of science, there has already come forward into prominence what claims to be a "science" founded on the essential autonomy of mind, and the wonder-loving public is rallying to it as though the salvation of the race depended upon it. We hear much of "thought transference" or "telepathy," and the claim is openly

made that "the action of one mind upon another independently of the recognized channels of sense" has been experimentally established. Far more astonishing things than this, indeed, as you all know, are now boldly claimed in the name of science. They are all based on the assumption that the mind, or something that must be embraced under any proper definition of mind, since it is no part of the body, is capable of cutting loose from its corporeal belongings and proceeding through space, exerting force upon material objects and taking possession of other bodies. Those who claim to be "investigating" such alleged facts, or at least most of them, proceed upon a principle the exact reverse of that by which all experimental science advances. Instead of making truth the end, and employing hypothesis as an instrument for guiding them to the truth, they make their hypothesis the end, and conduct their experiments with a view to finding some support, however slender, for their hypothesis. I need not tell you that nothing that the scientific world will accept as proof that any of these phenomena take place has ever been brought forward, and my only purpose in referring to the subject is to show the utter chaos into which the admission of the possibility of such things would plunge the whole science of mind.

The phenomena of mind must be investigated according to the same principles and by the same methods as other classes of phenomena; and this is what is actually being done by the modern school of experimental psychologists. And even at this early stage we are beginning to see what is likely to prove the basis of all the error that prevails and has always prevailed respecting the mind. Fundamentally, of course, it is due to ignorance of what the mind is, chiefly to the false belief in its independence of the body, but more particularly it rests upon the failure until recently to discover the true nature of consciousness, i.e., of the central or controlling principle of mind, that which makes every individual distinctively himself and no one else. In the great majority of cases this supreme authority is something fixed for each individual and permanently connected with his individuality during the whole of his life. But it is now beginning to be seen that this is far from being universally true, and the cases of "double consciousness" that have been dwelt upon so much of late, bewildering as they are to the unphilosophical, have furnished the key to the solution of the greater part of the mysteries that have beset the study of mind. It is now seen that hypnotism belongs to the same class, and that self-hypnotism, or so-called mediumship, where it is genuine, is simply a case of temporary double consciousness. And between this and the familiar fact of "unconscious cerebration" all the intervening steps can be traced. The influence of "expectancy" and the laws governing hallucinations are also becoming under-

stood, and we seem to be in the way of ultimately explaining on scientific principles most of the psychic phenomena that have so long seemed miraculous.

Some there are, I presume, who will look upon the scientific explanation of mind which I have endeavored to bring forward as *materialistic*. If to posit a material basis for the phenomena of mind be materialism it were useless to attempt to evade the charge. But in these days of the apotheosis of matter this charge is without force for those who possess any considerable acquaintance with the material world. If however the term materialism be employed in its only proper and legitimate sense as postulating the material nature of mind itself, the scientific conception of mind is the farthest remove possible from a materialistic conception. The antithesis between matter and property is absolute. Mere attributes are in the clearest sense of the word *immaterial*, and mind is simply an attribute. From this point of view it would be as reasonable to say that love, or honesty, or justice, or liberty were material things as to say that feeling and thought are such.

If, on the other hand, we glance at the theory of mind that stands opposed to the scientific view it is difficult to see how the charge of materialism can be escaped. If there is an element—call it mind, thought, soul, spirit, or what not—that can detach itself from the personality to whom it normally belongs, and pass into another body, or remain in space performing mechanical operations upon material objects, it matters not whether it be visible or invisible, or whether it can appeal in any way directly to sense or not, such a thing possesses the nature of a material body, as much so as the invisible atmosphere, the rarer gases, or the vastly more tenuous ether that vibrates to so great purpose against the retina of the eye. Turn it as you will, twist it as you may, matter can only be affected by matter, and the impact of moving matter against other matter is, in the last analysis, the essence of force. And this is true of the method which mind itself employs. Thought and feeling in and of themselves are powerless. They can only act through a motor system which uniformly and necessarily accompanies the sensor system, which transfers molecular nerve vibrations to the muscles, transforms them into molar motions, and communicates them mechanically to the world without. It is this that we mean by the term *expression*, whether it be of emotions or of ideas. It is thus that you are able to sit where you are and learn what my thoughts are. If I were merely to stand here and think my thoughts the nearest of you would gain no intimation of the nature of those thoughts.

This view of mind has all the promise of a true science. Mind is a great power in the world. It has wrought mighty changes in the past and is destined to work still mightier ones in the

future. And an experimental psychology is destined to place the laws of mind within the grasp of man, even as experimental physics and chemistry have placed the laws of matter within his power. The opposite view, of which no one will complain if I characterize as ontological, and which I have shown to be essentially materialistic, merely represents the alchemy of mind. The so-called "psychical researchers" are simply searching for the philosopher's stone. The same class have always been seeking it, and until late in the present century the whole domain of mind was in its pre-Baconian and medieval stage. The baser metals of mind will be transformed into gold by the new science of psychology in the same way that those of matter were transformed by chemistry, and if the race of psychic alchemists who think that gold alone has value are disappointed, the rest of the world will rejoice, as it always rejoices when science triumphs over magic.

March 2, 1894—Ætat. 52.

358. Frost Plants

History.—Written February 8, 1894. *Science* was at that time “on its last legs,” and did not appear till just a month after date.

Science, New York, Vol. XXIII, No. 574, Feb. 2, 1894, p. 66.

PROFESSOR MCDOUGAL'S article in *Science* for Dec. 29, 1893, and especially Professor Atkinson's notes in the *Botanical Gazette* for January, 1894 (p. 40), prompt me to record another fact tending likewise to show how hard it is to make an absolutely new observation in science, and how slightly what are afterwards found to be interesting facts of science are apt to impress us when first discovered. I was driving one day last summer through the section where Mr. Mason and I had seen the frost flowers of *Cunila* in company with Mr. William Hunter, now of the National Zoölogical Park, but who was reared in that country, and has recently become thoroughly acquainted with its flora, furnishing me from there a large number of additions to my flora of Washington and vicinity. As we passed the spot I pointed it out to him and told him there was where we saw the frost-freaks. With perfect naïveté he replied that he had been familiar with them all his life, having played with them when a school-boy at the village of Accotink, hard by!

March 17, 1894—Ætat. 52.

359. The Exemption of Women from Labor

History.—Written January 16–27, 1894. *Public Opinion* reprinted the first three paragraphs of this article without change. There was a review of it in the *Washington Star* that was probably written by Gail Hamilton.

The *Monist*, Chicago, Vol. IV, No. 3, April, 1894, pp. 385–395; *Public Opinion*, Washington and New York, Vol. XVII, No. 3, April 19, 1894, p. 50.

THE very original and somewhat startling plea of M. G. Ferrero in the January *Monist*, for the complete exemption of women from bread-winning labor is worthy of the author's chivalrous nature, and demands thoughtful consideration. One naturally feels impelled to accept his view, but such a crowd of practical objections at once arise that it becomes impossible to do so except in a very restricted sense. If he only means that women who actually bear children should be relieved from laborious physical activities during their productive period, nobody certainly ought to dissent, and it is to be hoped that the world has already got a long distance on the road toward such a result. But if he means that one-half of the human race should be and remain, from the standpoint of economics, non-producers, except in so far as the rearing of children is to be considered productive, the position cannot be maintained without important qualification.

So far as can be discovered from the article, its author proceeds upon the popular but erroneous assumption that every adult female in society is provided with a husband who is both able and willing to supply all her needs. To show how false this assumption is, let us glance for a moment at the conjugal statistics of the United States, which have been compiled for the first time in the history of the country for the census of 1890, but not yet pub-

lished.* These statistics show that at that date the number of female persons of all ages in the United States was 30,554,370, of whom 17,183,988, or 56.24 per cent., were single. The important fact for our present purpose is the number of percentage of marriageable women who are in fact not married. It is found that about ten per cent. marry before the age of twenty, and a very few before the age of fifteen. As the statistics are compiled in five-year periods, it is impossible to obtain figures for any age between fifteen and twenty, although proper marriageability begins at about seventeen or eighteen. If we take twenty as the basis, it appears that there were 16,293,326 female persons of twenty years of age and upward of whom 3,228,338 were unmarried, which is nearly 20 per cent. If we take fifteen as the basis, the number of that age and upwards was 19,602,178, of whom 6,233,207 were unmarried, or nearly 32 per cent. The true mean is somewhere between these and may perhaps be safely put at 25 per cent. The unmarried are made up of maids, widows, and divorced persons, the last of which classes is so small that it need scarcely be considered for the present purpose. Omitting the actual numbers and using percentages only, the returns show that between the ages of twenty and twenty-five about 53 per cent. were without husbands, between twenty-five and thirty about 28 per cent., between thirty and forty-five about 20 per cent. After this the number of widows increases so rapidly that from forty-five to fifty-five the unmarried amount to 26 per cent., and of women over sixty-five years of age only a little over 35 per cent. have husbands. Nearly six per cent. of all women never marry; about ten per cent. of those between the ages of thirty-five and forty-five had not yet married, and more than one-fourth of those between the ages of twenty-five and thirty were still unmarried. Further details are unnecessary, enough having been said to show how large a proportion of marriageable women are for one cause or another without that male protection and support that M. Ferrero's argument assumes.

Many of these unattached women are doubtless cared for in varying degrees by other male relatives, but it is clear that this ought not to be, since the men, on his theory, should have wives and families of their own. Ignoring, for the sake of the argument, the large number of cases in which the husband proves incompetent to support his family, and admitting that the 75 per cent. who have husbands are adequately provided with occupation in rearing their children, or, if childless, as a large proportion always are, in merely attending to the wants of their husbands, what shall be said of the 25 per cent. who have no husbands and are therefore deprived of this occupation? A considerable number of the

* I am indebted for these figures to Mr. Henry Gannett of the Census Office, and to the Hon. Carroll D. Wright, Superintendent of Census, for permission to use them in advance of official publication.

younger widows, it is true, have families on their hands, but these soon grow up and no longer require their attention. But if the wife is incapable of any form of productive labor, when she becomes a widow, and the support of her family devolves upon her alone, she is in an unfortunate position. Something more must be done than merely to nurse and protect her children. They must be fed, clothed, and housed.

M. Ferrero quotes, and quotes correctly, the economic law, or "paradox,"* as I have called it, that female labor "tends to lower the marketable value of male labor." It has been proved that a man and his wife working in a factory only earn the same that the man would earn working alone. This gives rise to one of those economic fallacies which it is found so hard to dislodge. It is akin to the fallacy that machinery should be discouraged because it throws the laborer out of employment. It overlooks the broader truth that two laborers must produce more than one. It proceeds from the pessimistic point of view that economic conditions must always be such that some one besides the laborer will take all the product except just enough to keep him alive. I am far from advocating the increase of female factory labor, but such labor with prompt and certain wages is often preferred by women to the ceaseless toil of farm and dairy life, with the uncertainty of crops and markets. The whole economic argument of Ferrero applies as well to men as to women. The real need is a great reduction in both the amount and the irksomeness of all labor, a greater resort to natural forces through invention and labor-saving machinery, accompanied, as it will be if the embargo upon distribution can ever be removed, by a greatly increased production, so that both sexes may perform only agreeable labor, may enjoy ample leisure, and at the same time may possess most of those material blessings which are requisite to the highest physical and spiritual well-being.

It could be successfully contended that a certain amount of productive labor, or, at least, of both physical and mental activity associated with the satisfaction of natural wants, is necessary, not only to health, but also to happiness, and this quite irrespective of sex. It might also be satisfactorily proved that in the present state of society, for all except the very poor, it would be better to equalise to some extent the nature of the activities of the two sexes, rather than still farther to divorce them. While there is no doubt that the sterner sex should perform the sterner duties, the prevailing notion that woman is made to remain forever indoors and inactive is, to say the least, extremely irrational and unhygienic.

Finally, what shall be said of the large and constantly increasing class of productive businesses which only involve manual exertion to a limited extent and largely consist in the exercise of

* *The Psychic Factors of Civilisation*, p. 279.

various mental aptitudes? Take teaching as an example. Shall women be excluded from such fields? Shall society lose the benefits which the peculiarities of the female mind enable women to confer in many of these employments, where men are less efficient? No doubt there should be a considerable readjustment of the duties of the two sexes, and this seems to be in process of accomplishment in the natural course of things. The division of labor of which M. Ferrero speaks must go much farther than he intimates. He would confine it to one class of female labor, that of rearing families and gracing homes. While, so long as nature remains what it is, the majority of women will continue to perform that chief function, there is and always will be a minority more or less large and respectable who must perform other functions to which the sex shall prove itself adapted. And the question will even arise whether the domestic function is always to be considered sufficient to fill the whole life of woman. Wives and mothers are often endowed not only with aspirations beyond it but with powers and talents that demand an opportunity for their exercise. Such cases are destined to multiply with the upward tendency of society. Indeed, a division of labor is beginning to be called for just here. It is found that without diminishing the efficiency of the domestic function or detracting from the emotional side of maternal life, much of the arduous part of home duty can be delegated by intelligent mothers to those who can do nothing higher, thus relieving the former from harassing occupations which lower rather than elevate their nature, and enabling them to attend to a nobler class of duties, such as education, charity work, social accomplishment, self-culture, or even authorship.

M. Ferrero does not say whether he would educate women or whether, like Rousseau, he would leave them to grow up under the influence of nature, but as education involves work on the part of the learner as well as of the teacher, it is to be inferred that he favors the latter *régime*. He speaks of beauty and grace as the chief charms of the sex, and hence the principal ends to be secured by exemption from work. He seems to refer to mere physical beauty and to ignore that higher beauty which beams from the intelligent eye and makes one quite forget that it may be set in a plain face. While it cannot be denied, as he points out, that ease and freedom from care produce symmetry and conserve beauty and grace, there will nevertheless always be plain women, and unless these possess something besides their "looks" to recommend them their chances of securing partners in life will be small. Moreover, that form of beauty which is purely physical is of short duration. It fades early, and the comeliest girl becomes a plain woman, or, when old, it may be, altogether ugly. But that form of beauty which is based on intelligence not only does not fade, but even increases with

maturity. The first wrinkles only serve to give it strength, and it is at its highest when the radiant countenance shines forth under silvery hairs. The female child of nature is a wax doll, pretty to play with for a time and then put aside. The enlightened woman becomes the equal and companion of man, of whose society he can never tire. As man rises in the intellectual scale he demands more and more this substantial companionship of a wife. There will be a few cases, as our author states in a previous article,* "of a *savant* marrying a stupid, unintelligent wife," but these will grow rarer, and unless something is done to even up the sexes on the score of attainment, the number of unmarried is likely to increase. It was strongly maintained for a time that there was an antagonism between mental and physical development in women, and serious opposition was raised to giving girls a higher education, but at length statistics were appealed to and the objection was found to be a purely theoretical one.†

The article of M. Ferrero would have interested me very little had he not professed to support his views with quite an array of facts from biology, which is the standpoint from which I have been in the habit of looking at such questions. Nothing is clearer than that man should be primarily studied as an animal, and every attempt to treat anthropological questions from a biological standpoint should be encouraged. But unfortunately thus far nearly every such attempt has resulted in a complete failure to make the proper application of the facts which biology furnishes. The fundamental fallacy, which I have written an entire volume to point out, is that of ignoring the psychic factor in man, i.e., of treating man *only* as an animal. Ferrero has not escaped this fallacy, and his undisciplined race of idle women would be little else than so many half-tamed animals let loose in society. But there are other fallacies which he, in common with most others who have approached the subject from that side, has been led into. The most important of these is his failure to understand the full meaning of sexual selection and the consequent sexual history of the animal kingdom. I have on several former occasions‡ endeavored to set forth this history in its broader outlines, and I need not re-elaborate it here. It will be more profitable to consider certain of Ferrero's illustrations

* *The Monist* for January, 1893, p. 232.

† "Health Statistics of Female College Graduates," being Part V (pp. 471-532) of the *Sixteenth Annual Report of the Bureau of Statistics of Labor of Massachusetts*, August, 1885, by Carroll D. Wright, Chief of Bureau, Boston, 1885. I am indebted to the Hon. Carroll D. Wright, U. S. Commissioner of Labor and Superintendent of Census, for kindly calling my attention to this important report and placing the volume in my hands.

‡ *The Forum*, Vol. VI, New York, November, 1888, pp. 266-275; *Proceedings of the Biological Society of Washington*, Vol. V, Washington, 1890, pp. 40, 41; *The Psychic Factors of Civilisation*, Boston, 1893, pp. 86-89.

in the light of it. He maintains that throughout the higher forms of animal life there is a division of labor between the sexes whereby the male assists in the maintenance of the female, and argues that this is the secret of the greater longevity of such animals, while the often brief existence of lower forms is due to the lack of such a division of labor. He shows that in some birds there is a form of marriage and true co-operation of the sexes, and says that

"the lion and the hyena, during mating-time, hunt only to provide food for the female, who remains passive," and that "in the monogamic and polygamic families of monkeys it is always the male or chief who guides the troop, who watches for the enemy, who opens the march, who advances courageously upon the adversary that threatens his family, while the female climbs the trees."

It would be strange if a few such cases did not exist where the very survival of the species depends upon the development of this instinct, but, as a matter of fact, they are rare even among the higher types. In the great majority of cases the female, in addition to her maternal sacrifices, not only provides for the nourishment of herself and offspring but also fights in their defence, while the male remains passive except when he is fighting his rivals for her attentions. I doubt the statement respecting the lion, for lion hunters learn by experience that the male is little to be feared, and even assert that he is a coward, while they equally learn to beware of the lioness, especially when her whelps are with her. Even Tartarin de Tarascon had learned this before he started on his *grande chasse*, and his only dread was lest he should encounter *la femelle*. It is the same with bears and most wild beasts. The males direct their prowess and confine their exertions chiefly to fighting off rival males of their own species, which contributes nothing to the support or protection of the "family." The barnyard cock is often seen to call the hens to a store of food, but these chivalrous attentions, like many human ones, are only paid to those that are least in need of them, and always have reference to a *quid pro quo*. He is never found following the old mother with her brood. She must scratch for herself and her chickens too. Many ungulates are highly polygamous owing to the fierce warfare of the males for the possession of the females.

"In our own country," says Dr. C. Hart Merriam in an unpublished report, "the elk and the buffalo are notorious examples of polygamous animals, single bulls possessing large harems which they defend with most jealous vigilance at the cost of many bloody battles."

It is also well known that among the latter of these animals at least there are to be found separate herds or groups of vanquished "bachelor" bulls that are not allowed to remain with the cows.

This is certainly a poor way for the males to care for the females. One of the charges against polygamy among human beings is that it necessarily forces the women to perform excessive labor and drudgery, and if animals are capable of doing anything for one another it must be the same with them. A still more extreme case is that of the fur seals.

"The male," says Krascheninikow,* "has from eight to fifteen, and even sometimes fifty females, whom he guards with such jealousy that he does not allow any other to come near his mistresses: and though many thousands of them lie upon the same shore, yet every family keeps apart; that is, the male with his wives, young ones, and those of a year old, which have not yet attached themselves to any male; so that sometimes the family consists of one hundred and twenty."

This statement made a century and more ago has been abundantly confirmed by later observations as recorded in Dr. Allen's work and still more fully by Dr. Merriam, who, as Bering Sea Commissioner, has recently enjoyed exceptional opportunities for studying the habits of these animals. Here also the bachelors, or "holluschukies" live apart, sometimes occupying separate islands.†

Any required number of facts might be adduced to show that nature makes scarcely any provision for the care and sustenance of the female and young even of the higher animals, and that male superiority here is simply the result of sexual selection, by which those qualities are developed in the male sex which are most admired by the females, among which, as to so large an extent in the human race, what may be called moral qualities, those that would most benefit the species, play an exceedingly restricted rôle.

Ferrero's examples among the lower, invertebrate types are unfortunate for his position. In bees and the like the male is literally a "drone" and devotes his brief existence wholly to the *Minnedienst*; and while in other insects that he enumerates the female psyche has a sufficiently brief career, that of the male is still further curtailed, many male insects taking no nourishment at all and even lacking the organs for this purpose. -It is a strained argument to attempt to show that this brevity of the imago state in insects is due to a lack of division of labor between the sexes. It proves a great deal too much, since many fishes are equally without provision of sexual co-operation, and yet they have somewhat extended lives. But most insects pass the greater part of their lives in the larval state which is often much prolonged as, for example, in the seventeen-year locust or cicada. Weismann has offered the only satisfactory explanation of the

* Quoted by Dr. J. A. Allen in his *History of North American Pinnipeds*, Washington, 1880, pp. 341-342.

† Report of Dr. C. Hart Merriam in the Fur-Seal Arbitration Case of the United States, 1892.

apparent anomalies in the duration of life in animals, and Ferrero would do well to consider this more carefully than he seems to have done. All the facts that he advances, while they have no bearing on the theory he is defending, go to support the law of normal female supremacy in nature as it prevails in the lower types and the subsequent reversal of that law by the stronger one of sexual selection operating in the higher types in which the psychic element has gained prominence.

On Ferrero's theory the bad treatment of women by savages constitutes an anomaly in the general course of development. If the higher male animals all worked for their females and offspring, supplying them with food and shelter and defending them from their enemies, while the females did nothing but bear and suckle their young, there certainly would be a marked contrast between their case and that of the savages, among whom, in most cases, it is the women who do all the drudgery work and in many cases supply the tribe with most of the necessities of life, while the men fight one another and other tribes, or hunt as much for pleasure as for meat, or lounge around the camp eating the food prepared by the women whom they do not allow to eat with them. But, properly viewed, there is no anomaly in savage life. Among animals there is very little *provision* in the proper sense. Many, it is true, have acquired through natural selection the instinct of storing food, which is usually done by both sexes. Indeed, the most remarkable cases of this are among insects such as bees, where a specialised race of "workers" has been developed. Still more remarkable and opposed to Ferrero's theory, these workers are females that have lost their reproductive powers, though, as pointed out by Herbert Spencer in his last rejoinder to Weismann,* there are not only intermediate forms to some extent even now, but as this condition has been the result of slow development, there must have once been all possible gradations. That is to say, queens are transformed into neuters, and it is the females that do the work. In the higher forms, as I have shown, in so far as there is work to do, the females do their full share, usually much more than their share. The transition from the animal to the savage state in this respect is very slight, and the savage only represents a prolongation of the animal state. The anomaly is not here. It is located farther back. The whole upper part of the animal series may be regarded as anomalous, and the anomaly is a radical one, since it represents a change from normal female superiority to abnormal male superiority, a change brought about by the females themselves through sexual selection, whereby they have surrendered their sceptre and bartered their empire for an æsthetic gratification. To some this may seem a degeneracy, but few would wish wholly to restore the Amazonian régime.

* *Contemporary Review* for January, 1894.

The effort of a fully self-conscious intelligence as it exists in the most enlightened types of mankind is to preserve all that is best in woman, to heighten to the utmost that æsthetic attribute through which she has ennobled man and made him what he is. It is no longer woman who selects. From the earliest historic period at least man too has been exercising choice, and female beauty as it now expresses itself in woman is the result. But the progress of civilization has wrought a change in the æsthetic tastes of mankind, and while physical beauty has lost none of its charm, moral and intellectual beauty have come to hold the first place, and true companionship can only be found in the harmonious union of these three. Such a combination in woman can only be secured through a life of interested activity which unites the exercise of all the faculties with the acquirement of both knowledge and the good things of this world. Agreeable productive labor is the highest and only true source of happiness and worth, whether for man or woman.

March 26, 1894—Ætat. 52.

360. Review of the Distribution of Wealth; by John R. Commons, New York and London: Macmillan & Co., 1893

History.—Written December 28–31, 1893. I received the book on November 25 and finished reading it December 27, mailed the review on January 1, 1894, and the March number of the *Annals* containing it reached me March 26.

Annals of the American Academy of Political and Social Science, Philadelphia,
Vol. IV, No. 5, March, 1894, pp. 818–822 [122–126]

March 27, 1894—Ætat. 52.

361. Spencer-smashing at Washington

History.—I wrote out these purely extemporaneous remarks to the best of my recollection on January 27, 1894, or four days after they were made, and sent them to Dr. W. J. Youmans.

The Popular Science Monthly, New York, Vol. XLIV, No. 6, April, 1894,
pp. 856–857.

AT a meeting of the Washington Society for Philosophical Inquiry held January 23, 1894, the Rev. Dr. Momerie, of London, read a paper on Agnosticism, consisting chiefly of a criticism of Mr. Herbert Spencer and a defense of the current dualistic conception of the soul as the thinking personality or ego considered as distinct from and independent of the body. The paper was discussed by Dr. W. T. Harris and Mr. Lester F. Ward. Mr Ward's remarks were as follows:

"While Dr. Momerie was reading his able paper I could not help thinking to what a remarkable degree the views of Herbert Spencer have become the object of philosophical discussion and public attack. To judge from the opposition to him in all directions one would suppose that his entire system of philosophy was unsound and worthless. No book, no philosophic essay, no form of discussion of any question is complete that does not score him at some point. This society since its organization a year ago has been engaged in an almost uninterrupted onslaught upon his doctrines. Dr. E. L. Youmans, who, when living, was the great American disciple of Spencer, used to characterize those who even at that date had begun to inveigh against him by the name of 'Spencer-smashers,' and since his death the business of Spencer-smashing has continued to increase; but, strange as it may seem, notwithstanding all this opposition the great philosopher will not down. I am not myself innocent of the charge of Spencer-smashing, and I thought these remarks would come with a better grace from the fact that I have just published what will probably be considered a somewhat severe criticism of Herbert Spencer's Political Ethics. But I am not unmindful of the astonishing power that he has become in the thought of the world, which renders any utterance of his wherein he is wrong so potent for evil. I recently asked a student of Oxford, here for a few days on his winter vacation, how Spencer was regarded at Oxford, and he told me that although his name was rarely spoken and then only in a whisper, as if, on Pope's theory of vice in general, its very utterance might lead to closer acquaintance, nevertheless Spencer was the unseen but overshadowing presence that surrounded the university and which it was considered necessary perpetually to guard against and drive back. I am not finding fault with the widespread opposition to Spencer. Nothing could be worse than to set up a high priest of opinion and bow down to authority. But I have often been amused to see how simple a matter it is supposed to be to refute his doctrines and overthrow his system. And I am disposed to attribute the solidity of his system, and the wonderful resistance which it offers to this perpetual bombardment, to the high degree in which it rests upon the firm foundations of truth. I am myself disposed to follow him with little deviation all the way until he reaches deductive sociology and ethics, and I leave him here only because I believe that, owing to unfortunate early political preconceptions, he has himself left the clear path which his entire system logically requires him to follow. But I did not rise either to approve or disapprove Spencer's philosophy, but simply to draw attention to the kind of man the world has to deal with when it ventures to antagonize his achievements. He fills no chair in any great university, he bears no title from the English crown, he holds no high post of public honor, he boasts no classical scholarship, he speaks no language but his mother tongue, and yet, by a complete mastery of that tongue, and by the sheer power of vigorous and organized thought applied to an 'encyclopedic' acquaintance with all that is worth knowing in the world, he has forced his way into every department of human thought and action. He has invaded science, art, philosophy, literature, morals, and religion in a way and with an authority that have commanded respect and attention, until to-day the eyes of the whole thinking world are centered upon him. I did not know but that Americans were alone in rendering him this unintended homage, but I have learned to-day that it is also the habit of his own countrymen."

April 9, 1894—Ætat. 52.

362. Fossil Cycadean Trunks of North America, with a Revision of the Genus *Cycadeoidea* Buckland

History.—Written December 26, 1893, to January 12, 1894. The mere writing of such an article as this is the least part of the work. I had become deeply interested in fossil cycads. I had seen Tyson's specimens in Baltimore and studied their descriptions by Fontaine. A fine collection of cycads had been received by the U. S. National Museum from the Black Hills, and in September I had gone out there and investigated their occurrence in place and secured many additional specimens. The largest of these arrived after my return, viz., on October 27. I decided to write an article giving the status of the subject at that date. All the American trunks, and the shorter European ones seemed to be sufficiently similar to be provisionally referred to one genus. Buckland had described the genus *Cycadeoidea* in 1825, which seemed to include them all.

In the very radical synonymy of this paper I referred nearly everything to that genus. This was the first of a long series of papers on cycads, the final complete treatment being contained in my extended memoirs on the *Status of the Mesozoic Floras of the United States*. This article was first offered to *Science*, but that journal was then practically moribund, and I therefore published it in the Proceedings of the Biological Society of Washington, before which it was read at least by title.

Proceedings of the Biological Society of Washington, Washington, D. C.,
Vol. IX, April 9, 1894, pp. 75-88.

April 23, 1894—Ætat. 52.

363. [Coxey's "Army"]

History.—The reporter called on Sunday afternoon, April 22, and I talked awhile to him, taking pains to make him write down just what I said and giving him time to do it. It appeared the next day as nearly correct as could be expected.

The Washington News, Washington, D. C., Second Year, No. 421, April 23, 1894, p. 3.

May 17, 1894—Ætat. 52.

364. Principes et Méthodes d'Étude de Corrélation Géologique au Moyen des Plantes Fossiles

History.—The history of the paper of which this is the French translation has been given (see supra, Vol. IV, No. 299), and it remains only to give an account of how it came to be translated and published in French. It was known at the beginning of 1891 and before, that the International Congress of Geologists was to meet in Washington in August of that year. All the publications of that Congress are required to be in French, though papers may be read before it in other languages. As a sort of novelty, I took it into my head to try to get a chance to read a paper at that Congress in French. In my note-book for January 15 I find this entry.

"Wrote a letter to Major Powell proposing to read a paper at the Int. Geol. Congress on the Trias. I have no idea I shall have a chance, but want to let them know that I can be ready."

On March 27, I made the following note:

"I commenced writing an article giving a résumé of my Trias paper. I may translate it into French for the Int. Geol. Cong., or make some other use of it."

The "Trias paper" referred to was a large manuscript on the Correlation of the Trias beds of the United States, the result of several years' field work. This "résumé" included what I subsequently divided into two papers, one of which is my *Plant-bearing Deposits of the American Trias* (see supra, Vol. IV, No. 301), and the other is the one now under consideration. When I had completed the first part of this résumé on May 8, I noted the fact and said that it was "now ready to be translated into French," but for some reason I did not translate this part. I seem to have begun to do so on May 15, but desisted. This might have been because I received a letter on May 21, from Mr. Gilbert "about my paper for the Int. Geol. Cong. which leaves little chance for me to take part." As the Geological Society of America and the American Association for the Advancement of Science were to meet at Washington the same week as the International Geological Congress, I decided to present the first résumé to the former of these and to write another on the principles and methods of correlation, based chiefly on the Triassic flora which I had already worked up for that purpose, and to give this to the Geological Section of the A. A. A. S. This, as we have already seen, is what was done, the second résumé being written from June 22 to July 4. I must have received about that time some encouragement respecting the International Geological Congress, for on July 12, I commenced putting the second résumé into French, and completed it on August 14. I may as well confess here what my method was of writing French. Of course I would not trust myself, and do not even now, to write a French article without first submitting it to a French scholar. I therefore wrote the translation with much space between the lines, and turned it over to Professor C. Fontaine, who had been the French teacher of the family for several years. Though not a man of science, he could and did suggest many improvements in idiomatic expression. Some of these Mr. Emmons, the geologist who managed the French end of the Congress, changed back to my original way of saying

them, till I showed him Professor Fontaine's changes made in my rough draft. Of course the corrections were *plus français* than my expressions. I had a duplicate typewritten copy made of the final French draft, and I still possess these two and also the original rough draft corrected by Professor Fontaine.

The paper was read in English before the Geological Section of the A. A. A. S. on August 21, as already stated, and on August 29, I was announced to read it in French before the International Congress of Geologists. I was to open the Congress that morning, but the American geologists, who had control of the meeting had arranged to have another man speak first. It was Mr. Eugene Hilgard, and I want to say that I am sure he knew nothing of the matter and had nothing to do with the program except to speak when invited. But it so shortened up my time that I had only ten minutes. I simply read as much as I could in the time and got through with two of the principles. I did not hurry, but read deliberately and laid the proper emphasis on important points.

I wrote a brief abstract of the parts covered, which was published in the minutes in both English and French and I presumed that would be all that would be done. Many of the foreign members including Professor Gaudry, had already written me eulogistic letters about my memoirs previously published by the Geological Survey, so that I found I was pretty well known abroad as a geologist and paleontologist. On February 20, 1892, I received a letter from M. Emm. de Margerie, Secretary of the International Congress of Geologists, and a well-known geologist, who had heard the part I read and had read the entire paper in English as it appeared in the *American Geologist*, urging that my paper be published in full in the *Proceedings* (*Compte Rendu*) of the Washington meeting. This was to appear as a public document of the United States, to be printed at the Government Printing Office, and was being edited by Mr. S. F. Emmons of the U. S. Geological Survey. Mr. Margerie probably communicated with him on the subject, and other foreigners may have pressed the matter, but of this I know nothing. At any rate on February 29, I received a letter from Mr. Emmons saying that it had been his intention all along to publish my paper in the *Compte Rendu*. He said it was in his hands, from which I infer that I turned it over to him soon after reading it. It was nearly

two years before I heard anything further from it, when on January 27, 1894, I received the proof. The page proof did not come till March 6. My reprints were sent me on May 17, and the volume of the *Compte Rendu* containing it appeared on June 15.

Congrès Géologique International. *Compte Rendu de la 5me Session*, Washington, 1891, Washington: Imprimerie du Gouvernement, 1893 [appeared in 1894], pp. 97-109. Covered reprints, 4°, pp. 97-109.

May 17, 1894—*Ætat. 52.*

365. The Cretaceous Rim of the Black Hills*

History.—Written February 3-20, 1894. I went to the Black Hills the first of September, 1893, after visiting the World's Fair at Chicago. The field work was done September 5-9. On January 24, 1894, I read a paper with this title before the Geological Society of Washington. From the sections made in the field I had prepared in pencil the two diagrams that form Figures 3 and 4, and these I enlarged with different colored crayons into large charts that were hung over the blackboard. The "paper" was an explanation of these charts and a historical sketch of the events and discoveries, as recorded in the paper when written. These pencil sketches, also the sketch-map, had to be drawn by a draftsman, and I possess my originals and the final drawings of all the figures of the article, also my rough manuscript draft of the article as written and the duplicate typewritten copy ("carbon copy") of it. With these I also find in my file a duplicate typewritten manuscript entitled: *Extract from Note-book from September 1-14, 1893*. A considerable part of it is embodied verbatim in the article, notably the sections.

* Published with the permission of the Director of the U. S. Geological Survey.

I sent the article the day it was finished (February 20, 1894) to Professor T. C. Chamberlin, for the *Journal of Geology*, and I received from him the following letter:

UNIVERSITY OF CHICAGO, CHICAGO, March 3, 1894.

Professor LESTER F. WARD,
U. S. Geological Survey,
Washington, D. C.

MY DEAR SIR:

I am in the receipt of your letter and manuscript. I have read the article with great interest and admiration. It seems to me most excellent and we shall be very glad to publish it. We will try to find a place in No. 3. If not there, certainly in the following number.

Very truly yours,

T. C. CHAMBERLIN.

Proofs reached me on March 26, and the April-May number appeared on May 17.

I continued my studies in the Black Hills Cretaceous in co-operation with Professor W. P. Jenney, making several other visits to the region. My final memoir was published in the *Nineteenth Annual Report of the U. S. Geological Survey*, 1897-98, Part II, pp. 521-712, plates lvii-clxxii, with the title: *Cretaceous Formation of the Black Hills as indicated by the Fossil Plants* (see *infra*, Vol. VI, No. 463).

The *Journal of Geology*, Chicago, Vol. II, No. 3, April-May, 1894, pp. 250-266.

May 20, 1894—Ætat. 52.

366. Weismann's Concessions

History.—Written September 24 to October 15, 1893. Two years earlier and not long after the appearance of my address on *Neo-Darwinism and Neo-Lamarckism* and my article in the *Forum* on the *Transmission of Culture*, I wrote to Dr. Youmans offering to write an article on the subject for the *Popular Science Monthly*, but he replied that it would be six months before he could find room for it. So I did not write it then. Meantime the second volume of *Weismann's Essays* appeared and I read it and wrote an article about it for *Public Opinion* (see *supra*, Vol. IV, No. 318). When the *Germ-plasm* came out in the spring of 1893 Dr. Youmans requested me to review it for the *Popular Science Monthly*. This was in April, but I had already received it from *Public Opinion* March 2, and had agreed to write a review. As I have already explained many things delayed my even reading the book, but when I finally returned from the field in September and worked up that short article I found I had notes for a much fuller treatment than *Public Opinion* could give me space for. I therefore commenced at once to write this article, finishing the rough draft on October 6, and the final draft on the 15th. I had duplicate typewritten copies of it made, and on October 21, I read it before the Biological Society of Washington, where it was thoroughly discussed. I remembered Dr. Youmans's request above mentioned, but I thought I would at least try to get it into the *Contemporary Review* where the Weismannian discussion was going on. I confess I had very little hope of success, but I ventured to send one of the copies across and let it take its chances. It was sent on October 26, and I have no record of its return, but presume it was returned. At any rate I sent the article to the *Forum* on January 30, 1894. I had not offered anything to the *Forum* since Mr.

Metcalf left it, and I did not know the new editor, Mr. Walter H. Page, but he acknowledged its receipt in a very polite letter of February 5. On March 14, however, he returned it saying that it was too technical for the *Forum*. I understand that the principal cause of Mr. Metcalf's retirement was the decision of the managers to exclude scientific articles and make the *Forum* more popular. I then (March 16) sent it to the *Popular Science Monthly*, and it was accepted at once and pushed through for the June number which appeared on May 20.

I have never returned to the subject since. It had degenerated into a mere quibble of words as to what constitutes an acquired character, and the latest definition seems to be that an acquired character is one that is not transmissible!*

The *Popular Science Monthly*, New York, Vol. XLV, No. 2, June, 1894,
pp. 175-184.

NEARLY three years ago, and before the appearance of the second volume of Weismann's *Essays*,† in a Critique of Weismann,‡ based entirely on statements contained in the first volume, I intimated that in my judgment he had already admitted enough to invalidate his doctrine of the non-transmissibility of acquired characters where these are of a functional nature. After showing from his own language that, according to his theory, no variation would be possible later than the Protozoan stage of development, which was a *reductio ad absurdum*, I proceeded to point out that, apparently from a sense of this position, he had actually admitted the possibility that external influences may affect the germ. One of the passages embodying such an admission is the following:

"I believe, however, that they [hereditary variations] can be referred to the various external influences to which the germ is exposed before the commencement of embryonic development. Hence we may fairly attribute to the adult organism influences which determine the phyletic development of its descendants. For the germ cells are contained in the organism, and the external influences which affect them are intimately connected with the state of the organism in which they lie hid. If it be well nourished, the germ cells will have abundant nutriment; and, conversely, if it be weak and sickly, the germ cells will be arrested in their growth. It is even possible that the effects of these influ-

* See *Science*, N. S., Vol. XVII, No. 429, March 20, 1903, p. 445.

† *Essays upon Heredity and Kindred Biological Problems*. By Dr. August Weismann. Authorized Translation. Oxford: At the Clarendon Press. Vol. i, 1889; vol. ii, 1892.

‡ Neo-Darwinism and Neo-Lamarckism. Annual Address of the President of the Biological Society of Washington, delivered January 24, 1891. *Proceedings*, vol. vi, Washington, 1891, pp. 45-50.

ences may be more specialized; that is to say, they may act only upon certain parts of the germ cells."*

In the same essay, speaking of the influence of climate, he also uses language that has a decidedly Lamarckian sound:

"It is difficult to say whether the changed climate may not have first changed the germ, and if this were the case the accumulation of effects through the action of heredity would present no difficulty."†

Upon this, my comment was:

"I can not see why this is not conceding the whole issue. Of course, all modifications must first affect the germ, otherwise there could be no hereditary transmission. The only question is: Can the climate or the environment impress changes upon the germ? If yes, the Neo-Lamarckian asks no more. All that he contends for is conceded."‡

In his later work on the Germ-Plasm,§ Prof. Weismann says that I am in error if I suppose that "the proof that climatic influences are capable of modifying the germ-plasm contains all that is required by the Neo-Lamarckian school." It is true that climatic influences in the restricted sense are not the only ones that Neo-Lamarckians suppose to act directly upon the germ. They maintain that *functional* variations are heritable to a greater or less degree, and make the chief distinction between these and *accidental* variations, such as mutilations and other injuries. The principal stress has hitherto been and still continues to be laid, by both Prof. Weismann and his followers, upon the latter class, which is therefore a waste of words and a mere show of argument calculated to deceive those who have little acquaintance with the subject. But when it comes to modifications of form which are brought about by the efforts and struggles of the creature to obtain its sustenance or accomplish desired ends, the case is wholly different. Such modifications are necessarily complex and involve a harmonious adjustment of all the parts that are brought into exercise, which, when transmitted, secures the complete and systematic variation which species are believed to undergo. Climatic influences are among the most important ones against which the creature thus reacts, but the entire environment may be regarded as constantly impinging, so as to bring about perpetual modifications.

In the second volume of his Essays there are further concessions in this same general direction. In his reply to Prof. Vines, he is compelled to admit that variation may take place in differ-

* Essays, vol. i, pp. 103-104.

† Ibid., p. 98.

‡ Neo-Darwinism, etc., p. 58.

§ The Germ-Plasm: A Theory of Heredity. By August Weismann. Translated by W. Newton Parker and Harriet Rönnfeldt. New York: Charles Scribner's Sons, 1893. Contemporary Science Series. See p. 408.

ent forms of asexual reproduction, which is a practical abandonment of his theory of the continuity—*i. e.*, of the unalterable nature—of the germ-plasm. He is apparently willing to “concede that some amount of individual variability can be called forth by direct influences on the germ-plasm.”* Surely a discussion as to the “amount” of such variation is a radically different thing from a discussion as to whether it can take place at all. The principle at issue is shifted when such an admission is made.

But this was only a beginning of the almost complete retreat that he has now made in his last work on the Germ-Plasm. As before, it seems to have been the phenomena which the vegetable kingdom presents that most obstinately refuse to adapt themselves to the mechanical theory of heredity of which he is the author. Before these facts his fundamental distinction between the blastogenic and the somatogenic idioplasm breaks down completely, and here at least he is “compelled to assume that *most, if not all, of the cells contain all the primary constituents of the species in a latent condition.*”† After carefully considering such cases as those of Bryophyllum and Begonia, almost any part of which may be made to grow if properly situated, he admits that such observations “apparently prove that ‘every small fragment of the members of a plant contains the elements from which the whole complex body can be built up, when this fragment is isolated under suitable external conditions.’”‡

Before passing to the major admissions of Weismann it may be well to mention a few of the “doubtful phenomena of heredity” which, in case they really occur, form such a stumbling block to his system. On this side of the water one is amused at the statement that “blue grains occasionally occur among the yellow ones in cobs of the yellow-grained maize (*Zea*) after fertilization with the pollen of a blue-grained species.”§ There is probably only one “species” of Indian corn, but the cultivated varieties are endless, and every farmer’s boy knows that it is of the greatest importance to keep these apart, so that the ears will “fill” with the same kind of kernels. Few American farmers would hesitate to stake their farms on the much more than “occasional” occurrence of different kinds of kernels on the same cob in a field where different varieties are planted together.

As regards the numerous cases of the alleged transmission of characters derived from one sire to the offspring of a subsequent sire, though disposed to discredit the evidence, he nevertheless admits their possibility to a limited extent. For he says of them: “We may, however, at any rate suppose that this so-

* Essays, vol. ii, p. 95.

† The Germ-Plasm, p. 206. The Italics are his in this and all subsequent passages.

‡ Ibid., p. 212. The words quoted by Prof. Weismann appear to be taken from De Vries.

§ Ibid., p. 383.

called 'infection,' if not altogether deceptive, only occurs in rare instances, and by no means regularly, or at most only in some cases."*

Here we have again, as in the general case above considered, a characteristic Weismannian argument, shifting the point from the qualitative to the quantitative, from the principle to the degree, which reminds one very forcibly of Jack Easy's wet nurse Sarah, who sought to excuse the illegitimacy of her child by the plea that "it was a very little one." In his reply to Mr. Herbert Spencer's articles† he has made matters worse by explaining it on the supposition that

"spermatozoa occasionally reach the ovary, and there enter into some of the immature eggs. Amphimixis can not proceed, as the germ-plasm of the egg is not ripe, but the nucleus of the sperm cell continues to live in certain circumstances, and so remains till the time of a subsequent *coitus* with another mate."‡

It is obvious that in such a case the "subsequent *coitus*" need have nothing to do with the matter; whenever the egg was ripe there would be nothing to prevent amphimixis taking place, followed by all the stages of ontogeny, and we should have a case of parthenogenesis in the mammalia. If this were possible in the human race it would create something of a ripple in the social world.

Prof. Weismann does not deny that certain diseases, especially germ diseases, are hereditary and directly transmissible in the first instance, and he admits that this has

"definitely been proved to occur in the case of syphilis. The father, as well as the mother, is capable of transmitting this disease to the embryo, and the only possible explanation of this fact is, therefore, that the specific bacteria of syphilis can be transmitted by the spermatozoön."§

But he will not admit that this constitutes a case of the transmission of acquired characters, undertakes to connect it with the adaptation of the parasite to the host, and concludes:

"It will, I think, at any rate be conceded that a 'constitutional' disease can not be taken as a proof that the processes of heredity are therein concerned until we can determine whether we are actually dealing with heredity—i.e., the transmission of a constitution—and not only with a transference of microbes."¶

* Ibid., p. 385.

† The Inadequacy of "Natural Selection." Contemporary Review for February, March, and May, 1893; reprint, London, Williams & Norgate; New York, D. Appleton & Co., 1893, p. 69.

‡ The All-sufficiency of Natural Selection. A Reply to Herbert Spencer. Contemporary Review for September and October, 1893, p. 609.

§ The Germ-Plasm, p. 388.

¶ Ibid., p. 391.

This all seems very absurd to the average reader, and conveys the impression that the scientific discussion of these questions has, after all, no interest for the public, and only amounts to a useless hair-splitting on the part of the doctors. For what matters it to the consumptive whether his case is one of "the transmission of a constitution" or "the transference of microbes"? Mr. Spencer, in the articles above referred to, has sufficiently characterized the reasoning which allows a microscopically visible microbe to penetrate tissues through which even biophors can not pass; and Prof. Weismann, in showing that the latter must break out of jail, should also explain how the former are able to break into jail. Taking all these things into account, I am constrained to repeat a former remark, that

"if the term 'acquired' is to be any further refined away, then discussion is useless, for it is not a mere dispute about a word that interests us, but the fundamental question whether external conditions do or do not permanently and progressively influence the development of organic beings."*

Reverting, then, to the main question as to the influence of external conditions on the germ, I would remind the reader that in his essay on amphimixis, originally published in 1891, Prof. Weismann held that "*a belief in the inheritance of acquired characters by the highly differentiated Protozoa, as well as by Metazoa, must be opposed,*" and imagined that "*the phyletic modifications of Protozoa arise from the germ-plasm, that is from the idioplasm of the nucleus*";† and he further says:

"My earlier views on unicellular organisms as the source of individual differences, in the sense that each change called forth in them by external influences, or by use and disuse, was supposed to be hereditary, must therefore be dismissed to some stage less distant from the origin of life."‡

He then ascribed all variations above this early stage to amphimixis and sexual reproduction. In the new work he indeed reiterates this view, and says that these processes furnish "an inexhaustible supply of fresh combinations of individual variations which are indispensable to the process of selection."§ But he now introduces the following important qualification:

"Although the process of amphimixis is an essential condition for the further development of the species, and for its adaptation to new conditions of existence among the higher and more complicated organisms, *it is not the primary cause of hereditary variation.*"¶

He then proceeds to explain the change that has taken place in his mind, obviously while writing this book, admits that he had

* Neo-Darwinism and Neo-Lamarckism, etc., p. 59.

† Essays, vol. ii, p. 192.

‡ Ibid., p. 193.

§ The Germ-Plasm, p. 413.

¶ Ibid., p. 414.

overestimated the power of sexual reproduction to modify species, and shows that though the general result might be changed there could be no variation in the determinants themselves, "which alone could gradually lead to a transformation of the species." Not only is amphimixis incapable of modifying the determinants, but it is also, and for the same reason, incapable of increasing the number of kinds, yet on his general theory these must be enormously increased with the development of every species. A new principle must therefore be found to explain the observed fact. Strangely enough, he finds this principle to be none other than the Lamarckian law of the effect of external conditions in modifying the hereditary elements!

"Amphimixis alone could never produce a multiplication of the determinants. *The cause of hereditary variation must lie deeper than this; it must be due to the direct effect of external influences on the biophors and determinants.*" *

It is easy to see that this is a complete abandonment of his fundamental doctrine of the immutability of the germ-plasm, and here again he shifts the point of the argument to the quantitative, and would have us believe that it was the same thing to say that it possesses "great power of remaining constant." But he adds:

"We can none the less avoid assuming that *the elements of the germ-plasm—i.e., the biophors and determinants—are subject to continual changes of composition* during their almost uninterrupted growth, and that *these very minute fluctuations, which are imperceptible to us, are the primary cause of the greater deviations in the determinants, which we finally observe in the form of individual variations.*" †

These variations that take place in the hereditary elements he ascribes to "the impossibility of a complete uniformity as regards nutrition existing during growth," or to "the modifying influence of nutrition." The following passage is as complete an admission of the Lamarckian principle as any one need wish, while at the same time it illustrates over again his characteristic tendency to evade the issue by maintaining that its influence is small compared to that of some other principle:

"Even though it can no longer be doubted that climatic and other external influences are capable of producing permanent variations in a species, owing to the fact that, after acting uniformly for a long period, they cause the first slight modifications of certain determinants to increase, and gradually affect the less changeable variants of the determinants also, the countless majority of modifications is not due to this cause, but to the processes of selection." ‡

In this passage there is a curious psychological implication in the expression "no longer," which obviously refers to the changes in his own mind, that are by him projected to the world at large,

* The Germ-Plasm, p. 415.

† Ibid., p. 417.

‡ Ibid., p. 422.

which, as a matter of fact, has from the first intuitively arrived at the conclusion which has cost him such a great cycle of elaborate reasoning. This new theory of his as to the origin of variations is summed up in the following paragraph:

"*The origin of a variation* is equally independent of selection and of amphimixis, and is due to the constant recurrence of slight inequalities of nutrition in the germ-plasm which affect every determinant in one way or another, and differ even in the same germ-plasm—not only in different individuals but also in different regions. These variations are at first infinitesimal, but may accumulate; and, in fact, they must do so when the modified conditions of nutrition which gave rise to them have lasted for several generations. In this way deviations may occur in the structure of single determinants or of groups of them—never, perhaps, in all at once, but at any rate in several or even many of them. A doubling of certain determinants of the germ-plasm may originate in the same way. The process of amphimixis has an important share in the accumulation of these modified determinants, for it may raise the minority previously existing in the two parents to a majority by combining their halved germ-plasms. Then, and then only, does selection begin to take place."^{*}

After all this it is certainly surprising that he should still cling to his former declaration that acquired characters are not transmissible. After abandoning all his premises he still adheres to his conclusion. Dr. G. J. Romanes, who has been one of his most liberal critics, after characterizing the latter part of the Germ-Plasm as "a right-about-face manœuvre," says that his first impulse "was to cancel all the criticisms which I had written of the Weismannian theory,"[†] and it really seems as though it were time to drop this prolonged discussion. Its further continuance must certainly be chargeable to his own course as pursued in Chapter XIII of his Germ-Plasm, and in his reply to Mr. Spencer in the face of these concessions. It is somewhat difficult to understand how he is able to reconcile these apparently conflicting views. That he does not limit the influence of external conditions to the germ-plasm proper, or fertilized germ cell, is apparent from his cheerful acceptance of Nägeli's "opinion that all variations are slowly prepared in the idioplasm in the course of generations before they become apparent," and we must suppose him to admit that it is the hereditary units themselves that are undergoing these transformations. In my address before the Biological Society I had referred to this in the following language:

"You will understand that I am speaking of variations which take place in the germ cells and sperm cells of parental organisms before they blend in the fertilized ovum. Most of Weismann's argument is directed to show that the fertilized ovum itself can not be affected by any transforming influence acting upon the mother during the growth of the embryo. This may be true, but

^{*} The Germ-Plasm, p. 431.

[†] The Open Court, vol. vii. Chicago, September 14, 1893. Supplement, p. iii.

it is unimportant. The time required to develop the embryo is too short for the environment to produce any material change however strong the tendency might be at the time in the direction of such change. It is chiefly the uncombined sexual elements which are admitted by all to be undergoing specific transformation."*

This is the main issue, and if admitted, the Neo-Lamarckian asks no more. How then does Weismann evade this issue? He says:

"It is self-evident from the theory of heredity here propounded, that only those characters are transmissible which have been controlled—*i.e.*, produced—by determinants of the germ, and that consequently only those variations are hereditary which result from the modification of several or many determinants in the germ-plasm, and not those which have arisen subsequently in consequence of some influence exerted upon the cells of the body. In other words, it follows from this theory that *somatogenic or acquired characters can not be transmitted.*"†

From these and other statements we are obliged to infer that while he admits the power of external influences to affect the somatic cells at all points where they impinge, adapting the organs of the body to the environment, and also admits that inequalities of nutrition (which at bottom are the same thing) modify the germ cells, he denies that these two facts have any connection with each other. Obvious as it is that the species becomes modified to suit the changing environment just as does the individual, he attributes the former wholly to natural selection and the latter wholly to direct adaptation. All, therefore, that is gained by this latter process is necessarily lost, and we have a strong indictment against Nature, "who," he says, "always manages with economy."‡ It seems far more logical to argue from the economy of Nature and the parallelism of these two processes for a causal connection between them.

But it must not be forgotten that he now makes natural selection itself entirely dependent upon "inequalities of nutrition" in the germ-plasm as its universal antecedent. Is this then so widely different from the direct adaptation that takes place in the somatic cells? Let us see how narrow the distinction grows with careful analysis. He admits that alcohol affects the germ and sperm cells by debilitating them and makes weakly children. He would admit the same of any deleterious drug. He would not deny that any disease that debilitates the parents would have a similar effect. These agencies may be regarded as the opposites of nutrition—*i.e.*, as constituting part of the "inequalities of nutrition" that affect the germ and cause it to vary. Variations in the germ-plasm are necessarily quantitative, more or less, according as nutrition is abundant or deficient,

* Neo-Darwinism and Neo-Lamarckism, etc., p. 49.

† Germ-Plasm, p. 462.

‡ Ibid., p. 63.

and all qualitative differences must be due to the external influences affecting certain constituents more strongly than the rest. How, then, does this differ from pure Lamarckism?

When we say that an organ is strengthened by use, there is obviously an ellipsis. What we mean is that exercise increases nutrition and nutrition strengthens the organ. We may be even more explicit and say that exercise causes increased circulation to the part exercised, causing more tissue to be deposited, thus enlarging and strengthening the organ. Lamarck, of course, understood all this, but did not think it necessary to explain these elementary principles. It is the same with the influence of climate and of the environment in general. All these agencies produce variation by affecting nutrition. If defective nutrition can affect the germ-plasm, why can not abundant nutrition affect it? How does the germ get its nutrition except in the same way that all the other cells of the body get theirs, through the food supply? Is the germ "immortal" in the sense that, like spirit, it can subsist indefinitely upon nothing? If it depends upon sustenance from the body, it must receive its nutrition from the body, and the quantity and quality of that nutrition will vary as those of the body vary. That they do vary he admits, and makes this the very *fons et origo* of hereditary variation.

But it does not seem possible to Prof. Weismann that a specific variation of some organ or part of the body can influence the reproductive products in precisely the same way so as to perpetuate that variation in the progeny. That we can not understand this may be freely admitted. It is the essence of the mystery of heredity. We know that like produces like. If we abandon that principle, there will be no stopping short of the opposite one, that like produces unlike. It is the same in principle to say that horses may produce cattle as to say that robust horses may produce feeble ones, although the robust ones may have acquired their robustness, not formerly possessed, through proper food, care, and treatment. And there is still no difference in the principle if, instead of robustness, the character be some specific one, such as a "racking" gait, which might be acquired during the life of a single individual. Such qualities are often transmitted. So, too, are the colors of flowers, which can be changed by adding certain ingredients to the soil, as are also certain artificially enforced habits in plants, such as are engendered by "layering," etc. But these are characters only feebly impressed and can not be expected to persist unless carefully aided by artificial selection, yet they *must* have commenced as acquired characters. Well-broken horses and well-trained dogs transmit these qualities to their offspring, and all domestication and cultivation of animals and plants, all changes wrought in them by man, must have been first acquired to some degree, and then, by intelligent selection, the degree can easily be increased. Like produces like, and if we

can not explain why, it is because we have not yet solved the problem of heredity. The elaborate theory offered by Prof. Weismann in his *Germ-Plasm*, plausible as it sometimes seems, true as it doubtless is in many of its details, utterly fails to solve this problem. It is altogether too rigid, too mechanical, to explain such subtle phenomena. Nature is more flexible, more self-adjusting, more delicate than his system contemplates, and is constantly doing just those things which he insists can not be done.

I trust that it has been sufficiently shown, chiefly from his own words, that in elaborating this complicated theory Prof. Weismann, guided, as he always seems to be, by the highest regard for truth, has, greatly to his credit, conceded all the essential points in the long controversy as to the inheritance of acquired characters. The discussion may therefore be regarded as narrowed down, not so much to the relative importance of the direct and indirect factors, as to the degree to which in any given case the one or the other has operated in determining the observed result.

July, 1894—Ætat. 53.

367. Hegel on the State*

History.—Written February 25 to March 18, 1894. Dr. Sterrett gave me his book on December 5, 1893, and I read it slowly and with the difficulties pointed out. Before writing I spent some time taking off heads. I find a long list of these with the rough manuscript, not half of which were referred to. I first sent it to the *Annals* of the American Academy of Political and Social Science, as a contribution to Political Science, but Mr. Emory R. Johnson, Editor of the Review Department, returned it on April 3, saying that the criticism was too severe. I did not attempt to tone it down, but sent it to Mr. Gunton's *Social Economist*, where it appeared.

Social Economist, New York, Vol. VII, No. 1, July, 1894, pp. 32-37.

MUCH has been said by the modern admirers of Hegel about the importance of his political and social philosophy, and especially his treatment of the state, but owing to his difficult style and the want of a good translation, his books have been practically sealed to all but a few Hegelian philosophers. This little volume is therefore of great value in supplying this deficiency. It aims to select the most important parts of Hegel's "*Philosophie des Rechts*" and other works bearing on the ethics of the state and of the body politic. The translation is doubtless excellent, but for this very reason a large part of it is absolutely unintelligible to any but trained Hegelians. Considerable portions are given in the form of abstracts, in which the author has made them as clear as the case would permit. In doing this, however, Hegel's views have been unconsciously modernized, sometimes amounting to anachron-

* The Ethics of Hegel. Translated Selections from his "*Rechtsphilosophie*," with an Introduction. By J. Macbride Sterrett. Boston. Ginn & Co. 1893.

ism, as where he is represented as condemning "agnosticism"! Upon the whole the English, and especially the American reader, will probably be disappointed with Hegel's doctrines. After making all allowance for the time at which he wrote, there is nothing in them that can be considered profound, original, or even important. A great thinker, such as Hegel is claimed to be, should at least say something that would be suggestive and contain germs capable of development. One would expect prophecies that the subsequent history of the world would have fulfilled, or that would be in process of fulfillment in our day. We find nothing of the kind.

In the first place, the bulk of the matter consists of long, tedious passages, clothed in the most abstruse metaphysical language, which, though grammatical in construction, express to the ordinary reader no thought whatever. Prof. William James, the eminent psychologist, who certainly ought to understand Hegel if anyone can, says of them:

"It is a fair question whether the rationality included in them be anything more than the fact that the words all belong to a common vocabulary, and are strung together on a scheme of predication and relation—immediacy, self-relation, and what not—which has habitually recurred."*

I several times turned two leaves by mistake and observed no incongruity, and on discovering the error was still unable to see that it made any difference in the sense, if sense it can be called. The following is an example taken quite at random:

"In this manner, *ethical substantiality* comes to its *right* and this right gains its *realization*. For the self-will and independent conscience of the individual, which existed as for itself only and produced an opposition against the concrete ethical life, disappear, when the ethical character recognizes as its motive and end the unmoved universal that has been reduced by its determinations to actual rationality; and when this ethical character recognizes its value, as well as the persistence of particular ends, as being grounded and having its actuality in this determined universal." (Page 143.)

But scattered through the book in the midst of this lingo, and apparently without any logical connection with it, there are numerous intelligible propositions. These express Hegel's views on the various questions treated. If they could be culled out of the other verbiage and published by themselves, this would reduce the amount of matter about ninety per cent., and although they would then only constitute a miscellaneous collection of heterogeneous and incoherent statements, they would not as now be buried under a mass of unintelligible rubbish. A brief glance at some of these, extricated from this mass at considerable labor, will indicate the drift of Hegel's thought.

* Principles of Psychology, Vol. I, p. 264.

He very distinctly propounds the doctrine of a social organism.

"The state is an organism, that is, it is the evolution of the *idea* into all its differentiations or different forms or organs of itself. . . . This organism is the political constitution; it proceeds eternally from the state, as also the state maintains itself through the constitution. If the two fall outside of each other; if the two sides become free from each other, there is no longer that unity posited which the constitution as an organism produces. Here the fable of the stomach and the other organs finds its application. For it is the nature of an organism that if its parts do not all merge into unison of activity; if one posits itself as independent, all go to destruction."

We thus gain a clear idea of what he means by the "organism," but it is difficult to understand what the "organs" represent. They do not seem to be the individual members of society, as in Spencer's social organism.

With Hegel everything is an undecomposable entity and all entities are endowed with "spirit," as the translators all have it, although it is doubtful whether the German word *Geist* is always correctly thus rendered. He speaks of the state possessing "abstract actuality or substantiality," and says that

"this substantiality itself is the self-conscious and self-willing spirit, as having passed through the form of culture and education. Hence the state knows what it wills, and knows it in its universality as something thought."

Further he says:

"The state is the actuality of the ethical *idea*; it is the ethical spirit as the manifest substantial will that is fully self-cognizant, and that thinks and knows itself and realizes what it knows and in as far as it knows."

If all this has any meaning, it is to endow the state with far higher attributes than will be conceded to it by mankind at large. In fact, it is usually looked upon as nearly or quite unconscious of itself, acting according to the impulses of the moment much as animals are supposed to do, *i.e.*, living exclusively in the present, whereas the intelligent individual man lives chiefly in the past and future.

A few of Hegel's views on some of the important questions growing out of man's relation to the state may be profitably stated. He concedes man's right to subdue and utilize nature. Animals have no "right" to life, and man may rightfully deprive them of it. Savages and barbarians have no right to their lands and may be justly dispossessed of their territory by civilized nations. Slaves have no rights, and slavery is not condemned. Classes in society are a necessity, and it is everyone's duty to be contented to remain in his class. The existing state is the true state and there should be no attempt to reform it. On this point he quotes approvingly the French Bourbon dictum, *Le plus grand ennemi du bien c'est le mieux*. Law must be exclu-

sively prohibitory. Punishment for crime is necessary and should be administered for its own sake. He inveighs against the now-accepted doctrine that the object of punishment is to deter from crime, and has no conception of the more humane ideas current in our day as to the relation of crime to disease. Marriage is not a civil contract, and should not be legal unless solemnized by religious ceremony. The best form of government is the constitutional monarchy. Suffrage should be restricted to representatives of definite interests organized under the commonwealth. Although everything is done by the *Weltgeist*, still heroes and great men are necessary. Religion is the foundation of the state. The translator has carefully excluded Hegel's views on the relation of the church to the state, because they would be unpopular in this country. The states of the world are distinct autonomies, and the idea of their ultimate union into a cosmopolitan nation is discountenanced.

It will be seen that all this is perfectly commonplace. The world has already outgrown most of it. It seems to be simply putting the seal of his approval on everything that actually existed in his day. He evidently believed that mankind had attained in Germany in the first quarter of the nineteenth century the highest estate that philosophy could prescribe. One is perpetually surprised at the smallness of the results achieved through such heavy muffled blows. The mountain labors and brings forth a mouse.

There is one way of explaining the sterility of Hegel's philosophy of the state which does not convict him of mental imbecility, and this even his friends ought to welcome. This explanation is that he was an astute time-server. If there were no historical testimony in support of this view, the internal evidence of his writings would furnish, to say the least, a strong suspicion of its correctness. The fact alone that everything that then and there existed was pronounced altogether as it should be and that all attempts at reform were condemned points clearly in this direction. And then we know that he held a high university chair dependent upon the will of the sovereign. The church, too, was all-powerful, and the least attack upon it would have been fatal to his position. His thorough-going libertarianism was sweet to the prevailing religious sentiment. His coarse notions of punishment, only opposed by the more humane determinism of later times, fitted in well with the spirit of the age. His numerous flings at Catholicism would, he knew, be pleasing to the clergy, as would those at France and the French revolution to the ruling classes. His condemnation of Rousseau's education of nature would be agreeable to the German state educationalists. His defense of social classes would tickle the princes and nobles. His hero-worship, though logically inconsistent with his *Weltgeist*, would accord with popular opinion and national pride. For the rest,

his ponderous *Wortkram*, which was intended not to be understood, would, he correctly reasoned, be mistaken for erudition and profundity. His "Rechtsphilosophie," whatever may be said of his other works, appears therefore to have simply been a shrewd and successful piece of toadyism.

But it is possible to carry a policy of this kind too far. Times may change, and what was safe at one period may become dangerous at another. We are therefore not surprised to learn that

"Hegel, inasmuch as he advanced his system early in the century, when an absolute or paternal despotism prevailed throughout the greater part of Europe, was generally considered by all liberal-minded people not only as an advocate of conservatism but of despotism. His doctrine was in truth a double-edged sword. To-day a king might rule absolutely, and on the morrow a popular rising might dethrone him and send both him and his adherents to the guillotine. That revolution would then exist and be as rational as the overthrown despotism. It was not very long before the reactionary parties denounced Hegel's philosophy as revolutionary, while it was strongly advocated by the radicals."*

Fichte, who tried the same tactics, was at length cassated by the church and insulted by the populace, and was only allowed to resume his chair on condition that he would make his "Absolute Ego" equivalent to God. But Hegel, with Fichte's case fresh in his mind, seems to have steered clear of these disasters and kept on the winning side of all questions. His true rank is therefore that of a successful politician.

* G. Koerner in the *Open Court*, February 22, 1894.

July 20, 1894—Ætat. 53.

368. Recent Discoveries of Fossil Cycadean Trunks in the Potomac Formation of Maryland

History.—Written April 18–21, 1894. It was simply dictated to the typist, the first copy corrected, and then copied in duplicate. I sent it to *Science* on April 23, but on April 30, Mr. N. D. C. Hodges, Editor of *Science*, notified us all that the journal must be suspended. On May 5, I read this paper before the Biological Society of Washington, with a slight change in the title, viz., *On a Recent Collection of Fossil Cycads from the Potomac Formation of Maryland*. Mr. Hodges returned my manuscript on May 19, and I sent it to Dr. Hollick for the *Torrey Bulletin*, in which it appeared on July 27.

Bulletin of the Torrey Botanical Club, New York, Vol. XXI, No. 7, July 20, 1894, pp. 291–299.

October, 1894—Ætat. 53.

369. Sociology

[A Definition of Sociology and especially of Applied Sociology]

History.—Written November 26, 1893. On August 20, 1893, Mr. William Howe Tolman, Secretary of the City Vigilance League of New York, wrote asking me for a definition of sociology, to be published in a *Handbook*. I was away at the time and did not return till the middle of September. I suppose I replied to his letter in a somewhat evasive way, and received a second letter from him dated November 18, 1893, renewing his former request and stating particulars. I then wrote this and sent it to him. Some time in October, 1894, I received the book.

Handbook of Sociological Information with especial reference to New York City, Prepared by the City Vigilance League, New York City, by Wm. Howe Tolman and Wm. I. Hull, New York, 1894, pp. 3-4.

THERE is no essential difference in the meaning of the term *applied* when used in relation to social science and that given to it when speaking of any other science, such as mechanics, physics, chemistry, etc. Every science, in order to be such, deals with a certain class of forces producing a corresponding class of phenomena. A study of the phenomena leads to a knowledge of the laws according to which the forces act. The forces being uniform and invariable, these laws are universal within the class in question, and under like conditions identical effects will be produced. The effects, however, depend upon the conditions, and these may be varied to any required extent by the experimenter. It is clear that the effects produced by any class of forces may be either beneficial, injurious, or indifferent, in relation to man, and that it is desirable to bring as many of them as possible within the first of these three classes. This is the purpose of applied science in whatever department.

It is done by modifying the conditions under which the forces act. The general term for this is *invention*, and the products of the beneficial effects of natural forces are known in a broad way as the *arts*, which also include all human *institutions*. These taken together constitute what is known as *material civilization*.

The effect of all this upon the mechanical, physical, and inorganic forces in general is too apparent to require further mention. But the organic world is also a domain of forces, more complicated, it is true, but not so much so as to exclude invention. Biology is the science in which vital forces operate, and its applied stage embraces the great arts of agriculture, horticulture, and stock-raising, as well as the healing art, and many others. In dealing with laws that control the actions of the higher animals, the psychic forces must be encountered and their nature understood. This has been successfully accomplished and they have been subjected to man's use.

The social forces are almost exclusively psychic and of a higher order than is met with in animals. They are correspondingly more complex, recondite, and difficult of study and reduction to law. But even this has been done, and government is the chief art that has resulted from this science of society. Its progress, as in the other sciences, must be proportioned to the degree of acquaintance attained with the nature and laws in this department. Using *legislation* as the expression for the method by which social science is applied, it is clear that all successful legislation must consist in a true process of *invention*, as the result of scientific, experimental study in the domain of the social forces. This is *dynamic sociology* or *applied social science*.

December, 1894 (?)—Ætat. 53.

370. Administrative Report for the Year ending June 30, 1892

History.—Written July 2–6, 1892. The proof came the middle of September, but the volume did not see the light till about the end of 1894. They had the habit of dating the title page as soon as it was cast, which, in this case was sometime in the fall of 1892, but then came the eternal delay in making it up. It is an outrage on all scientific work.

Thirteenth Annual Report of the United States Geological Survey, 1891-'92, Part I, Washington, 1892 [1894], pp. 146–155.

371. Report on the Department of Fossil Plants in the U. S. National Museum [for the Year ending June 30], 1892

History.—Written August 29 to September 3, 1892, the part relating to the Museum collections, by F. H. Knowlton, and that relating to the Lacoe collection by David White. It was revised and signed by me on September 3, and immediately sent in. My part in the acquiring of this great collection is not brought out in this report, indeed, I did not wish it to be. But, as a matter of fact, I was the cause of it, and but for me it would have gone elsewhere. The circumstances were these.

Prof. Leo Lesquereux had named a large part of Mr. Lacoe's collection, but for some years before his death he had not been there, and the later large instalments were unnamed. Mr. Lacoe had some talent in that direction, but he did not dare to trust himself. The collection had become enormous. Mr. Lacoe was getting old and was seriously considering the subject of so disposing of it as to secure its safety and usefulness for all time. He realized that private collections are usually lost after the death of the collector. Several institutions were anxious to obtain it, as he told me himself, but he did not say what ones they were, and I did not press that inquiry. I had been in correspondence with him almost ever since I had begun work on fossil plants, but it always related to specimens, etc., and I had sent him many of the documents he needed. Finally, in a letter of his, dated January 16, 1889, acknowledging some such favor, he took occasion to say:

"I am beginning to look forward to placing my collection where it will 'do the most good,' and would like to make such arrangement as would insure a continuance of the work of Prof. Lesquereux under more favorable circumstances."

I replied that inasmuch as Professor Lesquereux's mantle had in a sense fallen upon me, however unworthy to wear it,

I should be very happy to have charge of his valuable collection if he saw fit to donate it to the U. S. National Museum. Some time after this he called on me in Washington and we discussed the matter. I urged that at the National Museum the collection would not only be safe for all future time and open to students of paleobotany, but that I knew of no other institution where active work on fossil plants was being done. I was very politic and did not plead the cause at all. More than two years elapsed before the matter came up again. Late in 1891, Mr. Lacoe again called on me and told me that he had carefully considered all the claims made for the possession of his collection and was then strongly inclined to offer it to the U. S. National Museum on certain conditions. One of these conditions was that the unnamed material should be named up before the collection was removed from Pittston. This seemed to me to be wise, because there is so much unnamed material in museums which is practically useless. I told him that I could not do it myself for want of time, but that I had recently turned over to Mr. David White the entire Paleozoic branch of paleobotany, and he was specializing in that department, and would be able to name the material if the arrangement could be made. In December, 1891, Mr. Lacoe submitted to me in a letter his entire proposition and his conditions. I laid them before the Museum authorities, and the offer was formally and officially accepted. The report tells the rest, except that in the correspondence, conducted mostly by clerks who had no idea of its importance, I had to insist on its being submitted to me. One letter, I remember, was so couched that it would have given offence, and might have defeated the entire project.

The naming and installing of the collection was a prolonged affair and was not completed until some time in 1894. In *Science* for July 3, 1896 (New Series, Vol. IV, No. 79, pp. 8-10) Professor Goode gave an account of it, very properly describing Mr. White's part in it, and referring at the end to my early correspondence with Mr. Lacoe, but the facts here recorded were unknown to him, and, indeed, to any but Mr. Lacoe and myself.

Annual Report of the Board of Regents of the Smithsonian Institution for the year ending, June 30, 1892. Report of the U. S. National Museum, Washington, 1893 [appeared in 1894], pp. 185-190.

January (?), 1895—Ætat. 53.

372. Bibliography for the year ending June 30, 1892

History.—Written in July, 1892.

Ibid., pp. 523-525.

LESTER F. WARD. The Science and Art of Government.

Science, XVIII, New York, November 20, 1891, p. 281.

Defines government as the business agency of the nation, and the science and art of government as those of conducting this business agency; hence lays stress on the importance of some system of instruction on these subjects as branches of education. Instruction in public administration and all governmental operations should form a prominent department of political economy teaching.

— A national university, its character and purpose.

Science, XVIII, New York, November 20, 1891, pp. 281, 282.

Proposes a general plan for such an institution so as to make it truly representative in character, the leading chair to be that of political science, with special prominence attached to instruction in the science and art of government as outlined in the foregoing paper, all officers of the civil service to be ultimately selected from graduates of the national university.

This paper and the last were read before Section I (economics) of the American Association for the Advancement of Science, at Washington, D. C., August 20, 1891.

— Principles and methods of geologic correlation by means of fossil plants.

Science, XVIII, New York, November 20, 1891, p. 282.

Abstract of a paper read before Section E (geology) of the American Association for the Advancement of Science, at Washington, D. C., August 21, 1891. The paper appeared in full in the *American Geologist* for February, 1891. See résumé under that date.

— The Plant-bearing Deposits of the American Trias.

Science, XVIII, New York, November 20, 1891, p. 287, 288.

Abstract of a paper read by title before Section E (geology) of the American Association for the Advancement of Science, at Washington, D. C., August 21, 1891; and in full before the Geological Society of America at the same place, August 24, 1891. It was published in full in the Proceedings of the last named Society for that date. See *infra* for résumé of contents.

- Fossil Botany, being an Introduction to Palaeophytology from the Standpoint of the Botanist. By H. Graf zu Solms-Laubach. Authorized English translation by Henry E. F. Garnsey. Revised by Isaac Bayley Balfour.

Science, XVIII, New York, December 25, 1891, pp. 360, 361.

Review of the above work, in which it is compared with other works of its class, and is shown to be of chief use in recording the opinion of the author on the nature of problematical vegetable remains. The translation is severely criticised for not having been brought down to date, so that the author's latest decision in such cases could be known.

- On the Glossopteris Flora. Remarks on a paper read by Dr. August Rothpletz before the Geological Society at Washington, D. C., August 24, 1891, "On the Permian, Triassic, and Jurassic formations in the East Indian Archipelago."

Bulletin of the Geological Society of America, III, 1891, p. 15.

The view was taken that the Glossopteris flora originating in the Paleozoic contemporaneously with the recognized Carboniferous flora, unlike the latter, and by virtue of its higher organization, persisted into Mesozoic time, surviving the Permian refrigeration, and becoming modified, migrated northward, and reappeared at many points as the now well known Triassic Rhenish and Oolitic Flora.

- The Plant-bearing Deposits of the American Trias.

Bulletin of the Geological Society of America, III, 1891, pp. 23-31.

A critical analysis of the flora of the American Triassic deposits, with a view to their geologic correlation, both with one another and with those of other parts of the world. The facts establish the substantial identity in age of the several beds of the Atlantic slope and a close relation between these and those of New Mexico and Arizona; they also point to the European Keuper, as displayed in Austria, Wurtemberg and Switzerland, as the nearest homologue of the American Trias.

- Administrative Report to the Director of the U. S. Geological Survey for the year ending June 30, 1889.

Tenth Annual Report of the U. S. Geological Survey, 1888-'89, Washington, 1890, pp. 169-175. (Issued January, 1892.)

- Principles and methods of Geologic Correlation by means of Fossil Plants.

American Geologist, IX, Minneapolis, January, 1892, pp. 34-47.

The law of *homotaxis* is first explained, with a historical account of the introduction of the term. The leading principles laid down are: First, that the great types of vegetation are characteristic of the great epochs in geology, so that very imperfect material may establish such epochs with certainty; second, that for deposits nearly related stratigraphically such imperfect material is not adequate, but an ample series of good specimens is required; third, that the accurate determination and classification of fossil plants is of purely biological importance and not of geological importance. The methods employed in the determination of the age of plant-bearing deposits are set forth in considerable detail.

— Principes de Corrélation Géologique au Moyen des Plantes Fossiles.

Cinquième Congrès Géologique International, Washington, 1891. Procès-Verbaux des Séances Mercredi le 26 Août à Mardi le 1 Septembre, 1891. Washington, 1892, pp. 26, 27.

Brief summary of the part read before the International Geological Congress of a paper entitled "Principes et méthodes d'étude de la corrélation géologique au moyen des plantes fossiles," in which two of the principles were developed (see *supra* under date of August 28, 1891). The paper was read in French, and a summary furnished in English, of which this is a translation, made by Dr. S. F. Emmons. For contents of the entire paper see last entry.

— The utilitarian character of Dynamic Sociology.

American Anthropologist, Vol. v, Washington, April, 1892, pp. 97-103.

This article is a defense of the science of dynamic sociology as expounded in the work of that title against the charge of being a system of speculative philosophy devoid of practical bearing on living issues. It is directed primarily to establishing broad principles looking to the amelioration of the social condition, but does not claim to set forth any particular scheme of social reform, that part belonging rather to the art of dynamic politics than to the science of dynamic sociology. The general doctrine embodying these principles is that of *meliorism*, which differs from philanthropy and humanitarianism as popularly understood by proceeding according to the scientific method to establish the laws of social reorganization, such as will result in improving and reforming society.

— Ueber Tertiärpflanzen von Chile; von H. Engelhardt. Frankfurt, 1891.

Amer. Journ. Sci., XLIII, New Haven, April, 1892, pp. 335, 336.

Notice of above memoir from *Abhandl. d. Senckbergischen naturf. Ges.*, Bd. xvi, S. 629-692, pls. i-xiv.

— Miocene Plants from Northern Bohemia—Ueber fossile Pflanzen aus tertiären Tuffen Nordböhmens—Ueber die Flora der über den Braunkohlen befindlichen tertiärschichten von Dux; von H. Engelhardt.

Amer. Journ. Sci., XLIII, New Haven, April, 1892, pp. 336, 337.

Notice of above memoirs, the first in *Gen. Isis*, Abhandl. 3, Dresden, 1891, pp. 20-42, pl. i; the second in *Nova Acta d. Ksl. Leop-Carol. Deutsch. Akad. d. Naturf.*, Bd. LVII, No. 3; Halle, 1891, pp. 131-219, pls. i-xvii.

— Calcareous Algae. Fossile Kalkalgen aus den Familien der Codiaceen und der Corallineen; von Herrn Rothpletz in München, 1891.

Amer. Journ. Sci., Vol. XLIII, New Haven, April, 1892, p. 337.

Notice of above memoir in *Zeitschr. d. Deutsch. geol. Ges.*, Bd. XLIII, Berlin, 1891, S. 295-322, pls. xv-xvii.

— On the Fructification of *Bennettites Gibsonianus*, Carr.; by H. Graf zu Solms-Laubach, London, 1891.

Amer. Journ. Sci., XLIII, New Haven, April, 1892, p. 337.

Notice of above memoir in *Annals of Botany*, Vol. v, November, 1891, pp. 419-454, pl. xxv, xxvi. For fuller notice of the original German in *Bot. Zeitung*, see *Amer. Journ. Sci.*, for April, 1891 (Vol. XLI, p. 331).

- Le Nelumbium Provinciale des Lignites de Fuveau en Provence par le Marquis G. de Saporta, Paris, 1890 L.

Amer. Journ. Sci., XLIII, New Haven, April, 1892, pp. 337, 338.

Notice of above memoir in *Mem. Soc. Géol. de France*, Tome I, Fasc. 3, Mem. No. 6, p. 9, pls. XII-XIV.

- Recherches sur la Végétation du niveau Aquitanien de Manosque par le Marquis G. de Saporta, Paris, 1891.

Amer. Journ. Sci., XLIII, New Haven, April, 1892, p. 338.

Notice of above memoir in *Mem. Soc. Géol. de France*, Tome II, Nympheinees, Fasc. I, Mem. No. 9, p. 22, pls. III-VI; II, Palmiers, Fasc. 2, Mem. No. 9, pp. 23-34, pls. IX-XI.

- Remarks on the law of corrasion.

Proc. of the Philosophical Soc. of Washington, October 27, 1888. *Bulletin*, Vol. XI, Washington, April, 1892, pp. 519, 520.

Abstract of remarks upon a paper read by Maj. J. W. Powell on the laws of corrasion, describing the manner in which the Missouri River erodes its banks.

January, 1895—Ætat. 53.

373. The Natural Storage of Energy

History.—Written November 8, 1893, to May 6, 1894. These dates cover the actual writing of the three articles with the four titles now to be described, but the subject had occupied me nearly a year before I began to write on it. The leading spirits, Dr. Harris and Dr. Sterrett, of the Society for Philosophical Inquiry, described under another head (see *supra*, No. 357), were Hegelians. Dr. Frank Sewall, Pastor of the Swedenborgian Church, was also a leading spirit. Most of the rest were metaphysicians of one school or another, especially those of Plato and Kant. Major Powell and I were the only two representatives of modern science. The Major was cautious and inclined to be metaphysical himself, which left me somewhat alone in defending the scientific method. The Hegelianism, Platonism, and Swedenborgianism rather amused me than otherwise, and I gradually came to enjoy the humor, which I define as a detection of the ridiculous in what is regarded as serious. I liked in this way occasionally to “stir up the animals,” and point out the ridiculous in their profundity; as, for example, when they were discussing the “ego,” or immortal soul, I treated its origin, or the exact point of time at which it begins to exist, from the standpoint of embryology, fecundation, and karyokinesis; or when, at the close of Dr. Harris’s long series of papers on the Hegelian philosophy, which, he said, put him in a state of “hilarity,” I suggested that there was a certain beverage well known to Americans which would accomplish the same object in much less time and with far less expenditure of energy.

Dr. Harris was constantly talking about “self-activity” as the fundamental Hegelian doctrine, furnishing a *causa sui* and a *first cause*. I boldly accepted the doctrine and interpreted it into scientific language as equivalent to the conservation of

energy. I also accepted their doctrine of *final causes*, of course in the sense of my "anthropoteleology" (*Dynamic Sociology*, Vol. I, p. 28). Dr. Sewall was constantly referring to Swedenborg's "discrete degrees," and I ventured an interpretation of these also.

One of these discussions took place on May 23, 1893, when Major Powell and Dr. Harris held forth at length on the subject of "self-activity." I took part, and branched off on that of final causes, showing the connection between them and their bearing on that of "discrete degrees." I was cut short by the expiration of the hour, and they asked me to continue the subject in a leading paper at the next meeting. For the sake of brevity I gave in my title as simply *Final Causes*. The next meeting was June 6. The subject was on my mind the entire time, but I had no time to do anything but think, part of the time subconsciously. Finally on June 5, I stayed in my office after hours and worked till dark on a little pencil scheme which I wrote on a slip of paper, and which I still possess. The meetings were held in Columbian (now George Washington) University, at 4 P.M. I got there on the hour the next day (June 6), and, as my notes record, I "covered the whole board with my scheme of 'degrees of self-activity,' illustrating *Final Causes*. Opened the discussion occupying 40 minutes." Referring to the discussion my record further says: "I was surprised that my neglect of anthropomorphic conceptions was not taken up. Sterrett only referred to my great limitation of the field of final causes."

The following is a literal copy of the tabular statement made the previous day (June 5) on the little slip above mentioned:

DEGREES OF SELF-ACTIVITY

Man	{	Molecular motion and locomotion.			
		Physical, psychic, and vital phenomena.			
		Efficient, conative and noetic causes.			
Animals	{	Molecular and molar motion and locomotion.			
		Physical, vital, and psychic phenomena.			
		Efficient and conative causes.			
Plants	{	{	Molecular and molar motion.		
Protists				{	Physical and vital phenomena.
Protoplasm					
Organic Compounds	{	{	Molecular motion.		
Inorganic Compounds			Physical phenomena.		
Chemical Elements			Efficient causes.		

The reader cannot fail to see that this scheme contains the germ of the table which I have twice since reproduced, viz., in my *Outlines of Sociology*, p. 239, and in my *Pure Sociology*, p. 94. It is the largest subject that has ever occupied my consciousness, and as we shall see, it continues to grow.

My thought centered more and more on the subject of final causes and their origin, nature, and rôle in the world, and I began to see that they were the secret of all individual and social efficiency. After five months, which embraced my trip to the World's Fair in Chicago and the Black Hills, but during which I had not ceased to ponder the subject, I sat down on November 8, and commenced writing an article on *The Nature of Final Causes*. I reduced my original scheme to tabular form, calling the subjects "products" (of evolution), introducing "properties," and substituting "activities" for "motions." I also introduced the "ether" below the chemical elements. The rough draft was completed on December 14. As the essential thing was the way in which final causes were introduced into the world, I decided, when I started to make the final draft of my article on December 15, to change the title and call it *Final Causes and their Antecedents*. Thus changed the article was completed on December 21. I then worked over the original so as to make it conform in all respects with the final draft, and on December 23, I sent the latter to President Schurman and offered it for the *Philosophical Review*. He had, on a former occasion, asked me to contribute to that journal.

By a curious coincidence I received a letter dated December 21, from Dr. E. B. Foote, President of the Manhattan Liberal Club of New York, asking me to address the Club during the winter. I had some official work at Columbia University for February 13, 1894, which would require several days, and I informed Dr. Foote that I might accommodate him at that time. I did not then give him the title, but I decided to use this paper for part of my address. There was further correspondence in January, and the date was finally fixed for February 16. The idea that the power of man was so enormously increased by the aid of final causes had become uppermost in my mind, and I saw that this was accomplished in a manner analogous to that of a storage battery of electricity. I therefore decided to give my lecture the somewhat striking title of *The Storage Batteries of*

Nature. This address I wrote almost *de novo* from February 3-11, 1894, and of the table I made a large chart that could be seen across the hall. I took the chart with me to New York, had it hung in a conspicuous manner, and gave the address at the appointed time. The Club held its meetings in the German Masonic Hall, No. 220 E. 15th Street.

On February 19, my article on *Final Causes and their Antecedents* was returned from Ithaca with a letter from Professor Creighton, part of which related to another matter. The part relating to the article is as follows:

"We have examined very carefully your article on *Final Causes* and have found it very interesting reading. But your results are new in philosophical thought. I mean that you have reached along the line of science and evolution results which (with the exception of the relation of will and desire) are pretty generally accepted to-day in philosophy. It has seemed then to us that your article would appeal to the circle for whom it is primarily intended to a much greater extent if published in a scientific or semi-scientific journal."

There is a contradiction here in first saying that my "results are new in philosophical thought," and then that they are "generally accepted to-day in philosophy." The first was true, the second was not only not true, but my ideas had never been so much as dreamed of by the self-styled "philosophers." For them final causes were and still are confined to the "Divine Mind." All they know is theoteology, but even the human intellect is something supernatural.

I wanted if possible to get my article before the philosophers, so that, notwithstanding this discouragement, and with scarcely any hope of success, I almost immediately sent it to *Mind*, the great English metaphysical journal, which, nevertheless, under the editorship of Croom Robertson, a liberal-minded man, had published my former article *Mind as a Social Factor* (see *supra*, Vol. III, No. 179) and Grant Allen's review of *Dynamic Sociology*. The then editor was Dr. G. F. Stout, and he returned the article on April 14, saying that he had submitted it to a referee whose "decision was against its publication in *Mind*."

The "storage" idea had by this time taken so strong a hold of my mind that I resolved to rewrite the article in the light of my lecture on the *Storage Batteries of Nature*. I commenced this on April 28, and finished it on May 6, changing the title to the

one it finally bore. How this was done is described in my note-book of May 6th:

"Finished revising my 'Final Cause' article, incorporating most of the additional matter that I used in my New York lecture. I have prefixed a few paragraphs entirely new as an answer to C. Lloyd Morgan's questions. I now call it: 'The Natural Storage of Energy.' Wrote Dr. Carus a letter and mailed it with the MS."

This was the letter from which Dr. Carus published an extract (see the next entry). The reference in that and in my note-book to C. Lloyd Morgan's letter justify me in inserting it here entire:

16, CANYNGE ROAD,
CLIFTON,
BRISTOL, ENG.

19th April 1894.

MY DEAR SIR:

Thanks for your lecture on the *Status of the Mind Problem*. I so fully agree with your general drift that I regret the more to have to part company with you at last.

What do you mean by *matter*? Do you regard matter as a something which *possesses* properties, that in which the qualities inhere—i.e. the philosophical substance? If so surely that is not what 9 out of 10 of your audience would understand by matter. Or do you regard the word *matter* as signifying a concept which results from the generalization & synthesis of qualities or properties—an abstract and general term for the summation and condensation of properties a, b, c, d, etc. (extension & the rest)? If so matter *is*, for us at any rate, property—and then I don't quite know what you mean by saying that mind is a property of (organic) matter—nor what you mean by saying that the antithesis between matter and property is absolute.

That physiological happenings and the concomitant psychological happenings may be both properties of matter *as substance* I can quite understand. But if matter = generalized name we give to certain properties—then to say that mind is a property of matter is to say that it *is a property of a set of properties*, which is awkward to say the least of it. I prefer to say that physiological happenings and psychological happenings are strictly coordinate.

I really don't see what philosophical right you have to say that mind is a property of matter rather than (with that able & acute thinker Dr. Johnstone Storey) that matter is a property of mind [though I quite agree that as a matter of practical science yours is by far the lesser error]. To my thinking the mistake in either case is to say that one of the coordinate realities is a property of the other. To say that mind is a property of matter gives matter the *substantial* position—& this is what I understand by materialism. To say that matter is a manifestation of mind or mind stuff gives mind the substantial position & this (were the word not so beclouded) might be termed idealism—or as I have suggested psychism.

Would not "material concomitance" serve your purpose just as well as "material basis for the phenomena of mind"?

We agree so far that I trust you will not regard this little friendly discussion as impertinent.

I must try to get a sight of your Psychic Factors which should be an interesting & valuable work.

Yours truly,
C. LLOYD MORGAN.

I replied to this letter on May 24, and sent this article to C. Lloyd Morgan when it appeared. As in the preceding article published in the *Monist*, Dr. Carus felt it his duty to reply to it in the same number. He made quite an exhaustive analysis of it and criticized it point by point. He, too, calls it materialism, and says that I "reify the abstraction 'matter'." It is all in defense of his darling "monism," which, so far as I can gather, creates a universe out of nothing. To escape this bugbear of matter I have long been using the term "mass" as the substrate of the universe, but both Carus and Morgan completely misunderstand my position relative to matter.

I have made free use of the ideas in this article in subsequent works. I embodied considerable of it in my eleventh Hartford lecture on *Telic Progress*, written in July, 1895, and delivered on November 7, published in the *American Journal of Sociology* for March, 1897, and constituting Chapter XI of the *Outlines of Sociology* (see pp. 238 ff). The two great principles of "synergy" and "creative synthesis" are clearly stated here, though I did not employ those terms. In my *Pure Sociology* the "products" become the "synthetic creations of nature." The word "synergy" (*synergie*) was first used in my sense in a paper entitled: *La Mécanique Sociale*, read before the Fourth Congress of the International Institute of Sociology at Paris on September 25, 1900, and published in the *Annales*, Tome VII, 1901, where it occurs on page 182. This paper was reprinted in English in my report on *Sociology at the Paris Exposition of 1900*, which forms Chapter XXVIII of the *Report of the Commissioner of Education for 1899-1900*, Washington, 1901, pp. 1451-1593, where it occurs on page 1585. It is treated more fully in *Pure Sociology*, pp. 171-184. It is foreshadowed in my article on *Cosmic and Organic Evolution* (*supra* Vol. II, No. 89), and is fairly well defined in the present article by the words: "These two primary

forces [gravitant and radiant] interact, and wherever suitably balanced they result in the formation of symmetrical bodies preserved by equilibrating forces." I then called this "evolution" and showed that evolution was essentially organization.

It is somewhat remarkable, and is an excellent illustration of how thoughts grow, that although I was all this time perfectly familiar with the serial classification of the sciences as drawn up by Comte, it never occurred to me in all this discussion, nor even as late as 1903, when I introduced the table of "Synthetic Creations of Nature" and their "Differential Attributes" into *Pure Sociology*, p. 94, that there was an essential harmony between these synthetic creations and the sciences of the "hierarchy." Yet a glance at the two series instantly shows that the "products" of evolution are simply the subjects of the respective sciences, and that the arrangement in both cases is and must be the same. In the course that I have been giving here at Brown University on "The sociological aspects of education," I devote a large part of the time to what I call a "Survey of all Knowledge in the Order of Nature." I base it of course on the serial classification of the sciences, and dwell specially on the four principles and three corollaries of the Comtean hierarchy, which determine the order in which the sciences must stand, and which are:

A. PRINCIPLES.

1. Degree of exactness or "positivity."
2. Degree of generality and speciality.
3. Degree of simplicity and complexity.
4. Filiation.

B. COROLLARIES.

1. The higher are dependent upon the lower, while the lower are independent of the higher.
2. Their usefulness to man increases from below upward.
3. The degree of modifiability of the phenomena by man increases from below upward.

In the same course I naturally deal with the synthetic creations, which embody all knowledge. Thus brought together it is obvious that the two series are only two aspects of one thing,

viz., all knowledge. I therefore combine them so as to show the whole subject in a single table, which I have had made into a chart six feet square and hung in the class room. The following is the table:

Tabular View of all Knowledge in the Order in which it has been Evolved.

Kinds of Knowledge		Subjects of the Sciences Products of Evolution Cosmic Structures	Differential Attributes			
Sciences	Subsciences		Differential Properties Cosmic Functions	Activities Possessed	Phenomena Manifested	Causes Employed
Sociology	Pedagogy	Human Society	Civilization Socialism	Molar	Social	Final or Telic
	Pathology	Knowledge				
	Esthetology	Disease				
	Nomology (jurisprudence)	The Fine Arts				
	Politics, Civility (politics)	Justice				
	Ecology (economics)	The State				
	Theology	Wealth, Property				
	Ethology (ethics)	God, Religion				
	Philology	Customs, Conduct				
	Gamology (sex relations)	Language				
Psychology	Ethnology	The Family	Mind Intellect Feeling	Molar	Psychic	Conative
	Anthropology	Human Races				
	Objective Psychology	Man				
	Subjective Psychology	Man Animals				

Biology	Zoology	Organisms	Life	Zoism	Vital
	Botany	Animals			
	Plasmatology	Plants	Motility		
		Protoplasm			
Chemistry	Organic Chemistry	Organic Compounds	Chemical Affinity		
	Inorganic Chemistry	Inorganic Compounds			
		Chemical Elements	Chemism	Molecular	
Physics	Barology	Matter	Gravitation-attraction	Physical	Efficient
	Radiology	Electrons	Radio-activity		
	Etherology	Ether	Vibration		
	Thermology		Heat		
	Photology		Light		
	Electrology		Electricity		
Astronomy		Celestial Bodies	Motion	Radiant	
	Solar Astronomy	The Solar System	Orbital and Axial Revolution		
	Sidereal Astronomy	Stars	Radiation		
	Cosmical Astronomy	Nebulae	Evolution		

The Monist, Chicago, Vol. V, No. 2, January, 1895, pp. 247-263.

THE content of the universe is called matter. Whatever has existence (*Dasein*) is material. Where matter is not there is nothing. It is the thing-in-itself. Its ultimate nature is not known, perhaps cannot be known, since knowing is an attribute of its most complex state. Its proximate nature, however, can be known, and the proper object of philosophy is to penetrate as far as possible into the nature of matter, i. e., to explain the universe.

The simplest hypothesis would seem to be that *the content of the universe consists of an infinite number of infinitesimal elements possessing fixed velocities*. The last part of this formula is not hypothetical, but is the essential truth of the established law of the conservation of energy. Moreover, it is not essential to the hypothesis either that the number of elements be infinite or that they be infinitesimal. The assumption is therefore reduced to that of the existence of such elements, which is the assumption upon which all science proceeds.

Space, time, and motion¹ are the three conditions (forms) under which matter exists, and all matter always exists under all three of these conditions. The existence of matter under the conditions of space, time, and motion constitutes its three fundamental *relations*, the extensive, protensive, and intensive. So far as human intelligence reveals the ultimate elements of matter they are perpetually impinging upon one another, which changes the *direction* of their motion without changing its *rate*; that is to say, the constant impact of the material elements alters their motions without altering their velocities. This alteration of the motion of matter is the effect of which the impact or collision is the cause. This is causation in its simplest form, and all cause and effect are reducible to it. The idea of force is essentially the same. Force is therefore a compound relation growing out of the three simple relations.

We thus have two categories, matter and relation, the distinction between which is absolute. A relation is immaterial, but it can only subsist between material things: Think away the latter and nothing remains. It may seem superfluous to illustrate this, but the fundamental error of all philosophy has been that of confounding matter with its relations. If one element of matter occupies a different position in space from another there arise two relations of coexistence, distance and direction. No one would call these material. If an element of matter be moving, the time required to pass from one point in space to

¹ It seems strange that Kant did not include motion, along with time and space, as a "form" of all phenomena of the external senses.

another compared with an antecedent or subsequent period of time is a relation of sequence, which no one would think of regarding as material. If two moving elements collide, the collision is not itself material. It is an intensive relation. The change of motion produced by the collision is a compound relation, and although it cannot occur apart from matter, it can be thought apart from it, not as matter but as relation.

To show how prevalent is the confusion of matter with relation one only need consider the current theories as to the nature of matter. Such expressions as "centres of force," "collections of properties," etc., unwittingly rob it of existence. Eliminate matter and a centre of force is a centre of relation with nothing to be related. Properties are the forces that matter exerts. Remove matter and there remains nothing to exert force or manifest properties. Dynamism is a form of magic.

The unalterable inherent motion of all the elements of the universe is the fundamental source of all effects, the primal cause of all things—it is the true *causa sui*, *causa immanens*, or self-activity of the philosophers. The multitudinous forms in nature are the products of the inherent motions of the elements of which they are composed, and show that the series of causes and effects which have resulted in the existing state of things possesses a somewhat orderly character, involving a tendency toward the production of systems and symmetrical forms. Primarily there is seen the tendency to concentration due to a principle of attraction among the elements. This may be designated the *gravitant* force. There is, however, at the same time an opposite tendency to dissolution due to a principle of repulsion among the elements. This may be designated as the *radiant* force. These two primary forces interact, and wherever suitably balanced they result in the formation of symmetrical bodies preserved by equilibrating forces. It is this that constitutes true *evolution*, best exemplified in the celestial systems—cosmic evolution—and in organised beings—organic evolution. But looked at from another standpoint, the process may be regarded as one of *organisation*, which is *chemical* up to a certain point, beyond which it becomes *biotic*. In the former the activities are *molecular*, in the latter they are *molar*. The products of the former are *chemical substances*, those of the latter are *organic forms*.

The essential principle of organisation, whether chemical or biotic, is the concentration or focalisation of the otherwise diffuse and little operative activities of the universe in the direction of enabling them to produce increased and definite effects. Each product represents a different mode of storing up the universal energy, so as to expend it in some single, definite direction with an effect corresponding to the degree of concentration. The principle may be illustrated by the increased power of the sun's rays

after passing through a lens, the intensity increasing as the area upon which they act diminishes, or by that of an electric coil as compared with the diffused electricity of the air. Every substance is a sort of battery, capable of making effective the otherwise ineffective forces of its elements.

The forces thus condensed and stored up constitute what are called the *properties* of substances, and these properties differ according to the elements of which the substances are composed, that is, according to their constitution. These properties differ quantitatively as well as qualitatively. There are many degrees in which the elements of substances may combine, the resultant combinations becoming the units of higher degrees or orders of aggregation. The power of substances to produce effects is great in proportion to the degree of organisation.

Passing over the universally diffused and apparently homogeneous interstellar ether, which is the least concentrated form of matter about which anything is known, we seem to detect such degrees in what are called the chemical elements, as evidenced by their different atomic weights, and it is probable that the elements having smaller atoms combine to form those having larger ones. The properties of the latter class are thus rendered proportionally more effective, or, as it is said, more active.

The next stage is attained by the inorganic compounds, i. e., substances composed of chemical elements in various combinations. These differ from the elements of high atomic weights only in the fact that they are capable of artificial dissociation, by which their constitution can be determined. Being, however, of a higher degree of organisation their properties are proportionally more active. The inorganic compounds differ very widely from one another in their degrees of organisation, since this class includes not only those whose combining units are the different chemical elements, but also those which are made up of other inorganic compounds of lower degrees of organisation.

The third stage is that at which the so-called organic compounds appear. This, however, is probably only a convenient classification. It was formerly supposed that all organic compounds were the result of biotic conditions, the products left from the destruction of organised bodies, falling back to a plane intermediate between the purely chemical and the biotic. Such products there certainly are, but there are now known to be many organic compounds which are not so produced, and which can be artificially formed in the laboratory out of their inorganic constituents. The organic compounds also differ immensely in their degree of composition and correspondingly in the activity they display. Their properties differ greatly in their modes of manifestation, taking the form of astringents, narcotics, toxics, etc., in the vegetable alkaloids, and that of instability, changeability, and finally of isomerism in protein, casein, hemoglobin, and other

albuminoids. In each of these ascending stages the capacity for producing effects is enhanced.

Throughout all the stages thus far considered the only activities manifested are molecular. However large the molecules, those of albumen being equivalent to about five thousand hydrogen atoms, their power to act is confined to that which these exert within the systems which in each case characterise their chemical constitution. But this process of molecular recompounding is in the nature of things limited. The combining units become at length so large that they can no longer move among themselves without influencing the mass. This stage, that is, the stage at which molecular is transformed into molar activity, is reached with the appearance of the substance called *protoplasm*. This substance is probably a product of the recompounding of the albuminoids, which represent the highest degree of molecular activity. Protoplasm, therefore, which is the last or highest stage of chemical organisation, may also be regarded as the first or lowest stage of biotic organisation.

The leading property of protoplasm, as already intimated, is its power of spontaneous movement as a mass, which is simply a result of its internal constitution. The difference between spontaneous molecular and spontaneous molar activity is simply one of degree, and the latter phenomenon only surprises those who have not reflected on this fact.¹ It is admitted by all who have studied the constitution of matter that its elements are in a state of constant and perfectly spontaneous activity, but this is only perceptible to sense in the forms of heat, light, electric shock, weight, etc., in none of which is the actual movement among the particles within the range of the organs of sense. Therefore when this motion comes to be conveyed to the mass so as to be visible to the eye it is supposed that some entirely new principle is in operation. The illusion is dispelled by a very little thought devoted to the subject.

This spontaneous mobility manifested by protoplasm is technically called *motility*. It is the fundamental fact contained in the idea of *irritability*, as treated by Lamarck,² which, carefully analysed, is seen to consist in nothing else, that is, when kept wholly separate from sensibility, as Lamarck seeks to do. This, however, can only be done in thought. As a matter of fact irritability and sensibility always co-operate, are, indeed, but different aspects of the same fact. They constitute the initial stage of the relation which ultimately subsists between brain-

¹ This is the fundamental fallacy that runs through Dr. George M. Gould's exceedingly original and highly readable book, *The Meaning and Method of Life; a Search for Religion in Biology* (New York, G. P. Putnam's Sons, 1893), and neutralises the greater part of its contents.

² *Philosophie Zoologique*, éd. Martins, Paris, 1873, Vol. I, pp. 8, 398; Vol. II, pp. 2, 37 ff.

states and states of consciousness, between neurosis and psychosis. The explanation of the origin of sensibility is that protoplasm is of such an unstable and delicate nature that to secure its permanence it must possess some protecting quality and sensibility is such a quality. It is probably the only one that would have served the purpose. To some it may seem that this makes it necessary to invoke design in order to endow it with such a property, but the leading principle of modern biology obviates this. It teaches that protoplasm could not have come into existence at all without this property. If there had been no such property there would have been no protoplasm, no life, no organic world. The same reasoning does away with the necessity of predicating sensibility of the simpler forms of matter, those whose activities are wholly molecular. These are so much more stable that no such quality as sensibility is required to preserve them. It need not, however, be dogmatically denied that ever diminishing degrees of sensibility may pass down into even the simplest forms of matter.

As already remarked, chemical organisation ceased and biotic organisation began with protoplasm. It is the only vital and psychic substance, the true life- and mind-stuff, and all further progress in focalising and utilising the universal energy has resulted from the organisation of protoplasm so as to multiply its power. This has consisted in a series of mechanical adjustments. In the organic world protoplasm is the power while *structure* is the gearing which concentrates that power. Although protoplasm exists in every cell, the main lines through which it works are the nerves, which, in the higher organisms, consist of large trunks with numerous local reservoirs and innumerable branches permeating all sensitive tissues.

In order that sensibility accomplish its purpose, the preservation of the organism, sensations must be either agreeable or disagreeable; hence pleasure and pain. The instability of protoplasm renders every part ephemeral. The entire organism is in a state of constant and rapid change of substance (metabolism), and fresh supplies must be momentarily introduced to prevent destruction by waste. The biological principle of advantage is adequate to secure this end. The supply of tissue is attended with pleasure and the actions necessary thereto follow naturally. The same is true of reproduction, which a study of the lowest organisms shows to be theoretically only a form of nutrition. The origin of pain is even simpler. The destruction of tissues results in pain and the actions necessary to prevent it also follow naturally.

Pleasures and pains once experienced are remembered, i. e., they are represented when not present, and there arises a disposition to repeat the former and to avoid a repetition of the latter. This is *desire*, and it becomes the prime motive to action.

The organism necessarily acts in obedience to desire, or if there be several desires that interfere with one another it acts in the direction of their resultant. Hence the conative faculty or *will* so called.

Up to and including this stage the *cause* of all activity is generically the same. It is the efficient cause, the *vis a tergo*. *Motive* must be distinguished from *purpose*. Desire and will are simply motive. It is a natural force and does not differ except in degree of complication from any purely mechanical or physical force. But evolution has gone on to another stage. In much the same way as, by adopting a new method, it passed from chemical to biotic organisation, it has, by making another new departure, passed from genetic to telic causation.

The direction of progress was seen at the outset to be toward the greater concentration of cosmic energy, toward making the universal force, whose quantity cannot change, perform more work. This law continues in operation to the last. Telic causation is only another way of accomplishing this end. Just as biotic organisation was called in where chemical organisation could go no farther, so teleology is resorted to at the point where genesis ceases to be effective. In the last stages before this point is reached the chief agent in nature is will, but, as already stated, its action is direct, the same as mere force in any other form. The new agent differs primarily from all others in being *indirect*. The essential characteristic of the final cause is *indirection*.

It is a common figure to represent any force as blind. The conative force is still more frequently so characterised. Desire sees no obstacles. Love is blind and blind impulse rules the lower world. But while results are accomplished by this direct method according to the intensity of the impulse and the strength of the organism, it is evident that there is a limit to the achievements of will. Desire must go unsatisfied if its object cannot be attained within this limit of physical strength. With the advance of biotic organisation desire increases more rapidly than does the power to overcome obstacles, and the number and magnitude of the obstacles to the attainment of desired ends thus rapidly increase. Any new advance must look to overcoming these difficulties and to clearing the way for the accomplishment of higher results. Still again the biological law of advantage comes forward. The new device is the *final cause*. It consists of a mechanism for the utilisation of force that is running to waste, and in this respect the economic principle of all evolutionary progress is employed, but the application of this principle is wholly unlike any hitherto made.

The conative power was seen to reside in an organised nervous system with an increasing integration of its parts in subordination to a general directive centre, the brain. The physical progress

continued to all outward appearances unchanged except in degree in passing from the conative state which is genetic into the noetic state which is telic, but by insensible degrees a new psychic faculty was evolved. This new psychic faculty in its developed state is called the *intellect*, but it had its nascent and inchoate stages which, though the same in essence, scarcely deserve that name. The name, however, is unimportant. It is only needful to understand its nature.

Its physical nature may be safely said to be unknown. A theory is that there takes place within the substance of the brain a miniature reproduction of the entire panorama displayed by the external world to the organs of special sense, which register all impressions and preserve them for future comparison and use. The mind itself thus actually *feels*, or, as it were, *sees*, not only all that is presented to the senses but all that has been so presented in the past, or so much of it as it has the power to retain. The simultaneous felt presence of so many impressions renders it possible to make comparisons and recognise differences and samenesses. It thus declares agreements and disagreements which constitute the basis of all *thought*. Agreement of wholes is identity, agreement of parts is similarity. These are the fundamental relations, but there are many kinds of relations, and the intellectual process *per se* is the *perception of relations*.

How, then, does this simple faculty of perceiving relations become a new power in the world for the storage and use of the universal energy? What is the precise form of indirection that so greatly multiplies the effect produced? Is there anything essentially new in the nature of the force constituting a final cause? To the last of these questions a negative answer must be given. There is only one *genus* of cause in the sense of a force, and that is the direct impact. The difference between efficient and final causes must be sought in the mode of their application. While the final cause, as its name implies, is inspired by an end in view, it is in reality not directed toward that end. In mere motive or will, unaided by the intuitive faculty, the force of the organism is so directed, but for want of this faculty it may fail to attain it. The telic power differs essentially from the conative power in being directed not to the end but to some *means* to the end. Intelligence works exclusively through means, and only in so far as it does this does it employ the final cause. Instead of seeking the thing desired it seeks some other thing, unimportant in itself, whose attainment it *perceives* will secure the thing desired. This is the essence of intellectual action and all that constitutes a final cause. It is the process of converting means into ends. It thus becomes necessary that the means be *desired*, otherwise there is no *force* for the accomplishment of results. So far as the pursuit of the means is concerned the action is purely conative and does not differ from that which

pursues the end directly. The whole difference consists in the *knowledge* that the end will follow upon the means. A final cause, therefore, stripped of its manifold concomitants which so obscure its true nature, consists in the pure intellectual perception that a certain end is attainable through a certain means. But this is simply saying that in and of itself it is not a cause at all. Knowledge is merely a *guide* to action. Intellect is a directive agent and can no more be called the cause of the result accomplished than the rudder can be called the cause of the progress of a boat.

There are all degrees in the amount of indirection involved in teleological action, from a mere *détour* necessary to avoid an obstacle to the highest feats of engineering, in which each separate part, say, of a Ferris wheel, must be wrought and put together to make the perfect structure which exists in the mind before the first step is taken. In this latter illustration every effort put forth from the beginning to the end is a direct conative act applied to a means. But the work as a whole is telic, the end being constantly in view. And such is the nature of the entire course of material progress achieved by man. It is by this that he is primarily distinguished from the rest of nature. The human intellect is the great source of telic activity. The works of man are the only ones with which we are acquainted that proceed in any considerable degree from final causes. But if there be any other source of final causes, the process must always be the same—efficient causes applied to means.

It was observed at the outset that in the case of genetic phenomena, i. e., of efficient causes, the effect, if the impinging bodies are inert, is always exactly equal to the cause. This is also true of final causes, so far as their action upon the means is concerned, but the *final* effect, if it can be so called, is usually much greater than the cause or effort expended. Wherein consists this difference? How has the force exerted acquired this increased efficiency? The answer is easy. The final cause is the mind's knowledge of the relations that subsist between the means and the end. But the chief of these relations, and the only practical one, is the action of other natural forces outside of the agent's will-power or muscular strength. What the mind sees is that such forces exist and are operating in certain directions. What the intelligent agent does is to place the thing he desires but lacks the power to move into the current of such a force which moves it for him. This is the type of teleological action. It is illustrated in its simplest form by the lumberman who puts his logs into the river and lets the current float them to their destination. But the most complicated cases may, by proper analysis, be reduced to this simple principle. Teleology is essentially the utilisation of natural forces, causing them to do what the agent perceives to be useful and wills to be done. The applications of wind,

water, steam, and electricity are this and nothing else. All machinery falls into the same class. Civilisation in all its material aspects is but the expression of this truth.

It thus appears that the course of evolution as above sketched has been in the direction from the unorganised and inefficacious toward the organised and efficacious through the process of storing energy in appropriate forms. This has taken place by a series of successive steps, each resulting in a more efficient product, that is, one possessing, in addition to the properties of antecedent products, some new property with a special power of its own capable of better work. The new property may be called its *differentia*, or differential attribute. The thought is embodied in the well-known phrase of Linnæus: *lapides crescunt, vegetabilia crescunt et vivunt, animalia crescunt, vivunt, et sentiunt*; to which might be added: *homines crescunt, vivunt, sentiunt, et cogitant*.

It is possible to arrange these several products of evolution in their ascending order of development, assigning to each the particular property by which it is distinguished from all below it—its *differentia*. There are also certain other special attributes that require to be taken into consideration. These are of three kinds: the nature of their *activities*, the *phenomena* they manifest, and the *cause* through which they work. For example, all activities are either molecular or molar, all phenomena are either physical, vital, or psychic, and all causes are either efficient, conative, or final. The products themselves have already been enumerated in the order in which they must stand. The universal ether may be placed at the bottom of the scale as representing the most diffuse form of matter with the least power, when not concentrated, of producing effects. Next come the chemical elements, which form a class, although they might themselves be arranged in an ascending series. The inorganic compounds naturally follow the elements, and the same remark applies to them. The organic compounds differ from the inorganic still less than the latter differ from the elements, but they belong above them, and like them, only to a still greater degree, exhibit gradations in efficiency. Protoplasm is their highest expression and spans the chasm between the chemical and the biotic planes of existence. It makes the plant possible and prepares the way for the animal. At the head of the animal series and of the entire system stands man.

The classification thus sketched may be put in the following tabular form:

PRODUCTS	DIFFERENTIAL ATTRIBUTES						
	PROPERTIES	ACTIVITIES	PHENOMENA	CAUSES			
Man.....	Intellect	Molar	Psychic	Final Conative			
Animals.....	Feeling		Efficient				
Plants.....	Life			Vital			
Protoplasm.....	Elective Affinities	Molecular		Physical			
Organic Compounds.....							
Inorganic Compounds.....	Wave Motion						
Chemical Elements.....							
Universal Ether.....	Wave Motion						

To the general proposition that properties increase in activity as the constitution of the substances manifesting them increase in complexity, it has been objected that there are certain very complex substances which are at the same time rather inert, as for example, clay; while there are certain simple chemical elements, such as oxygen, that have very active properties.

The first of these objections is simply a misconception of what is meant by complexity. The mere stirring together of heterogeneous materials without natural affinities is not complexity, but confusion. The only complexity contemplated is organised complexity. The substance, to manifest active properties, must be a system so integrated as to put forth the combined energy of all its constituents. This, all true chemical substances are believed to do, which is the reason for the law. But it is not the case with clay and most rocks and "minerals," or of any mere mixtures, whether natural or artificial. Unless a substance has formed itself through its own attractions and natural adaptations it does not come within the class of complex substances under consideration.

The second objection, viz., that those properties are most active whose effects are most manifest or obtrusive, is due to the same qualities of mind which look upon gaudy colors as superior to subdued ones, or a noisy person as more important than a quiet one. Oxygen, it is true, has powerful affinities for a great many other substances and has literally reduced nearly the whole earth to ashes by a process of *eremacausis*, but it is the sword of Attila, and not the spirit of progress. The fitful spell of activity is quickly followed by the embrace of death. Neither is the idea of activity to be gauged by the power to destroy living tissues or to produce effects upon sense in any form. If this were all, the most complex of chemical substances would be the least active. It is the power of doing work that increases with organisation. The power of the albuminoids takes the forms of instability, isomerism, and general adaptability to use in forming tissue and contributing to organic life. Protoplasm itself has no destructive power. Its activities are wholly constructive, and

hence infinitely higher than those of oxygen, or even of the most virulent poison. It is life and not death that costs. A bull in a china shop may annul in a moment the result of years of skilled labor. The destructive work of nature is universal, its constructive work is local and limited. The power to create is pitted against the power to destroy. Life is an effort directed against the universal tendency toward death. Expressed in cosmical terms it is the struggle of the radiant forces with the gravitant forces, and is the result of the interaction of these two forces, neither of which acting alone can produce it. The active agents in this warfare are the several combinations that I have enumerated—the storage batteries of nature. Ethereal vibration, chemical affinity, motility, vitality, sensibility, will, intellect—these are the ascending steps in the cosmical series, and at each step the operative power of nature is increased.¹

A great deal has been said, and is still being said in certain circles, about a counter-force to gravitation, which is conceived as something quite different from the radiant energy as explained above. It is claimed that mind is such a force and is capable under suitable conditions of causing ponderable bodies to rise into the air against the force of gravity. To this alleged force has been given the name of *levitation*. It seems very strange, if such a force exists, that it cannot be demonstrated by the strict laws of physical experimentation in such a manner as to render its acceptance universal, as much so as the fact of magnetism, which, I am bound to say, had it not been apodictically proved, would be equally improbable *a priori*. Be this as it may, I merely wish to say that if such a force actually exists it possesses nothing antagonistic to the principles here laid down. We know that an organized living body is a reservoir of force. That of man, it is true, so far as its direct physical manifestation is concerned, is, even relatively to his size, comparatively small. His power, as has been shown, is chiefly indirect or teleological. But so far as most persons have had an opportunity to observe it, this force is only manifested through the organised system by means of a nervous apparatus directly attached to muscles, tendons, bones, joints, and limbs, which, in an equally direct mechanical way, seize upon material objects that are present and in immediate contact. This must be done to the means even in the most effective applications of the final cause. The simple question is whether there is another way, similar to that of a magnet, by which the stored-up energy of an organized system can act, apparently at a distance, but really through the ethereal content of space, and thus counteract the force of gravitation, which likewise acts through the ethereal

¹ These views may be regarded as a slight amplification of those expressed in an article on "Cosmic and Organic Evolution" in the *Popular Science Monthly* for October, 1877 (Vol. XI, pp. 672-682).

content of space. There is nothing antecedently impossible or even improbable in this, only it requires to be demonstrated to the satisfaction of all and put in the way of verification at will.

There can be no such thing as action at a distance. The magnet or the electric discharge does not act through absolutely void space. This is unthinkable. There probably is no such thing as space that is not occupied by some form of matter in some such sense as the atmosphere or any gas occupies space; not an absolute *plenum*, for this would negative motion, but a partial *plenum* with ample room for the action of particles. It is through space thus occupied that the gravitant and radiant forces must act, and if there is a levitant force it must act through the same medium. The savage thinks the wind immaterial—spirit—as did the founders of language the world over. We have got beyond that stage of culture, but most men are still savages enough to believe that a stone falls to the ground through some immaterial or spiritual power. Another forward step in cosmical conceptions must be taken and it must be realised that there are ethereal as well as aerial storms, disturbances, and activities, and that no phenomenon can take place except by the impact or collision of moving matter, which is the essence of all force or energy, and the only *cause* in the universe.

Laplace has somewhere said that the discoveries of science throw final causes farther back. It would be more correct to say that such discoveries push final causes farther forward. They certainly tend to indicate that man's work alone displays design, and that all conceptions of teleological action outside of man's work are anthropomorphic. The inherent activity of all the elements that make up the content of the universe did not rise above the molecular plane until protoplasm was reached, and up to that point all phenomena were merely physical. While sensibility may be theoretically predicated of protoplasm and may be said to accompany all vital phenomena, it is only at its lowest stage throughout the vegetable world, and nothing that deserves the name of psychic is found below the animal stage of development. Psychic phenomena are subjective and non-self-conscious throughout the subhuman realm of life, and only the incipient stages of intellectual perception are reached by the highest animals. None but efficient causes are operative until man appears and in his less developed condition, as also in the purely animal state, the power exerted is purely conative—the struggle of the unguided will. Not until the full-orbed reason comes upon the scene does the telic force at last gain sway and begin its triumphant career.

In a very general sense it may be held that cause and effect are always equal, but from the standpoint of the present discussion all progress is due to the increasing difference between effect and cause. This results from the successive differential attributes

which are superadded at each evolutionary step. These modify the susceptibility of the products, causing them to react more and more vigorously at each step. The law of the equality of cause and effect ignores these increments of stored energy and assumes absolute inertness in the impinging bodies. But when these increments of energy are taken into account, the effect of impacts loses its simplicity and becomes at length incalculably complex, being in fact the resultant of all the properties involved. To the power from without is added the power from within. There are actions, reactions, and interactions, until in the higher stages of biotic organisation, and especially in the domain of final causes, the disproportion between effect and cause becomes enormous, as, for example, in the case of the lever and fulcrum. This often puts it beyond all power to calculate results. In the domain of purely mechanical causation that controls the heavenly bodies, it is possible to predict remote future events. The astronomer can, as it were, write the biography of the solar system in advance, as is done in computing the nautical almanac so many years ahead of date, but who could write the biography of a newborn infant? Great indeed is man's power of prevision under science. The motions of the planets can be foreknown for an indefinite future, physical and chemical effects are accurately deduced from the known laws of these sciences, the rate of growth and multiplication of plants and animals can be approximately arrived at, the psychic activities of animals can be counted upon with sufficient definiteness to be of great value to man, even the feelings, emotions, and propensities of human beings, with their resulting actions, can be rudely presaged, and the will itself reduced to very general laws; but when an attempt is made to bring the intellect under the dominion of law, to calculate the orbit of the reason, to determine the path of a thought, all rules of the calculus fail. It is here and not in the will that the nearest approach to freedom is to be found. In all other departments there is some limit to the causational influence, but in the department of the higher mind, where all other forces in nature are brought under subjection, the possibilities are practically unlimited. A brilliant French writer has said that human thought is the sum of all the forces of nature. This is true in the sense that it is the master of nature, although in any strict sense it is not only not a force, but it is not even a cause. The final cause is not itself a cause, it is the appropriation of all causes.

January, 1895—Ætat. 53.

374. [Extract from a letter transmitting the Manuscript of "The Natural Storage of Energy"]

History.—Written May 6, 1894. The circumstances are related in the history of that article (*supra*, No. 373).

Ibid., p. 284.

"I HAVE received so many letters from those who have read my article in the January *Monist* and my *Status of the Mind Problem*, asking me questions that require long answers, in which I can only restate what is said in this article, that I have decided to try to publish and send it as a general answer to all such questions. The thing that turned the scale and finally determined this action was a letter recently received from Prof. C. Lloyd Morgan, very courteous and appreciative, but propounding questions which it would require me to give him nearly all that is contained in this article in order fully to reply.

"The article also will serve as the only answer I can now make to your own strictures, and will be better than to put it in controversial form."

February 1, 1895—Ætat. 53.

375. [Note on a Collection of Fossil Plants made by Professor W. P. Jenney in the Black Hills]

History.—Written January 17, 1895. This collection was fully elaborated in my memoir on *The Cretaceous Formation of the Black Hills as indicated by the Fossil Plants*, published in the *Nineteenth Annual Report of the U. S. Geological Survey*.

Science, N. S., New York, Vol. I, No. 5, Feb. 1, 1895, pp. 137-138.

February 1, 1895—Ætat. 53.

376. Vegetation of the Ancient World

History.—This little note was written by me on January 17, 1895. It is all that has ever been published on a subject to which I have devoted a large amount of study, and which I have done much to popularize and make known. But I have done this entirely through public lectures. On November 19, 1890, I received an invitation from the Catholic University of America to deliver one of the scientific lectures that were to be given during the winter. I gave as the title: *American Forests in Geologic Time*, and the date was fixed for December 19. I had the charts that I had used for my lecture in 1883, but it occurred to me that I would like to illustrate this one with lantern views showing the vegetation at the different geologic epochs. There were many fine ideal landscapes made by the best authors and artists of the science, such as Unger, Heer, Saporta, and Dawson, and I proposed to have lantern slides made of some of these. I discussed the subject with Major Powell and he approved of it heartily and directed the photographer of the Survey to make me as many slides as I wanted. He thoroughly believed in having the staff of the Survey do all in their power to spread scientific knowledge before the people, and said that he wished I would prepare a course of illustrated lectures and give them whenever and wherever I was asked to do so. The slides were made and the lecture delivered as announced, and it was a perfect success.

In 1891 there was established a "National Chautauqua" at Glen Echo on the Potomac above Washington half way to Great Falls, and on May 27, a Mrs. Stowell called on me and asked me to deliver one of the lectures. I gave my title as *The Vegetation of the Ancient World*, and the date was fixed for

July 3. It was given in the Amphitheatre to a large audience. I had then somewhat increased the number of slides.

In 1893 I was invited to give a popular lecture in a course at the University of Rochester in Anderson Hall. I gave the same title as the last time, and delivered the lecture on April 24. I went from there to Ithaca the next day and repeated the lecture at Cornell University.

The next time I was asked to speak on this subject was the occasion we are now considering. Professor P. R. Uhler, Provost of the Peabody Institute in Baltimore, said he would like to have two lectures. I then had many new views, and I had one view prepared showing the most beautiful fossil plants that had been collected in the city of Baltimore. I also then had a fine series of views of cycads, including the original specimens of Tyson, and to increase the interest, the specimens themselves were brought to the hall and put in a conspicuous place. Of course in these lectures I dwelt specially on these local matters, but they were of great interest in and of themselves. In announcing these lectures in the Calendar of the Peabody Institute for 1894-'95, Professor Uhler gave them the somewhat awkward title of *Some of the Remarkable Extinct Floras of Ancient North America*.

In the early part of 1896, I was invited to give one of the lectures of a winter course arranged by All Souls Church (Unitarian) in Washington, and I decided to exhibit my views there. I gave my title as *The Vegetation of the Ancient World*, and it was so announced on the Calendar and fixed for March 18. I could then only select such views as could be properly treated in a single lecture, and I usually prefaced the pictorial part by some remarks on the geological formations and the age of the earth. This was done on this occasion, and I remember characterizing the universal ignorance of even "educated" people on these subjects, and also of scientific specialists on branches outside their own specialties.

The next opportunity I had to discuss this subject was the most satisfactory of all. My slides had so grown in number and importance that they could well form the basis of a course of lectures, which thus far I had never been able to give. When Dr. Albion W. Small, Head Professor of Sociology at the University of Chicago, invited me to give the summer courses there in

1897, when he was abroad, I made the fact known to Professors, Chamberlin and Coulter, the professors of geology and botany, respectively, that I would be there for six weeks and would be willing to give my illustrated lectures to the students in those sciences. But both of them were to be away and there would be few students there in either of those branches, so they joined in inviting me to come again in the fall and give my lectures, promising a good audience of appreciative listeners, consisting of the entire body of students in both their departments. I had already planned to make a geological field campaign in Kansas immediately after delivering my sociological lectures and without returning to Washington, and had gone to Chicago prepared to do this. I therefore informed Professors Chamberlin and Coulter that I would give the lectures on my way back from the field in October, and I took my slides to Chicago and left them in their charge during my trip west. It was arranged that I should give five lectures in the Walker Museum, beginning on October 18. The whole affair was admirably managed, chiefly by Professor Chamberlin, the audiences were large and appreciative, both of the head professors were present at about every lecture, and a stenographer was there to report my remarks, which were wholly oral and mainly explanatory of the views thrown on the screen. But here I had an opportunity to use all my slides, and I had several new ones made illustrating the evolution of plants. In fact I laid special stress on that aspect of the subject and used as the title of the course: *The Evolution of the Plant World as shown by Paleobotany*, and it was so announced. Here for the first time I used these views to illustrate the principle of sympodial development (see *Pure Sociology*, pp. 71-79), which I had been emphasizing for many years. But they constitute a powerful argument in favor of that principle. After my return to Washington Professor Chamberlin sent me the stenographic notes of the entire course and I corrected and perfected them and had them typewritten, making a manuscript of 134 typewritten pages, the five lectures clearly separated. If the views could be reproduced and inserted as plates it would make a fine illustrated volume.

The following year, 1898, I gave the same course of lectures on sociology to the summer students at the University of West Virginia (Morgantown), and I sprinkled in my paleobotanical

lectures among the sociological ones, as the authorities could arrange. The audiences were appreciative, but few had any equipment for understanding them. The title of these lectures as given in the official announcement was simply *Plant Evolution*. This time also I made five lectures of it, viz., July 23, 29, August 5, 10, 11.

I have already stated the circumstances under which in October, 1899, I gave a course of lectures in sociology at Stanford University, and supplemented them by a few public lectures. These latter included one on *Evolution as seen in the Geological History of Plants*, which I gave in the chapel, on October 23, taking Dr. Jordan's hour. I did not have my slides with me that year, and could go over some of the ground only, without them. I specialized on sympodial development. Several days before (October 19) I had been down in the arboretum where I found two young shoots of the linden, probably the Old World species, *Tilia orientalis*, showing the phenomenon to perfection. These I exhibited at the opening of the lecture with the best effect.

On October 21, when I attended a meeting of the Geological Club in San Francisco and met many geologists, including Professor Joseph Le Conte, Andrew C. Lawson, and others from the University of California, they made me promise to come to Berkeley before I left the Slope and give them a lecture. I could not go till I was through at Stanford, so I took it in on my way east. It was on October 31, that I went, and I repeated the lecture last mentioned in all essential respects. But the presence of geologists and paleontologists, as well as botanists gave it a much greater zest. I had taken my linden twigs with me, and they excited much interest. The subject of sympodial development was entirely new to them, as it still is to almost everybody.

Early in 1902 (January 13-17) I went to Baltimore to describe Professor Bibbins's new cycads at the Woman's College, and while there gave two illustrated lectures on *Floras of the Past*. I had part of my slides and ran them through. These lectures were given on January 13, and 16. The only new feature was the introduction of a discussion of the "cosmological perspective" of the age of the earth. I had been reading Haeckel's *Welträthsel* and was struck by his treatment of this subject (mostly in a long note). But it had occurred to me that it could be made still more striking by a dial, and I had been amusing myself in

devising one. I had a pencil draft of it, and I copied it on the blackboard and treated the whole subject in the first of these lectures. I have since had a slide made of it and have published the dial several times (see *infra*, Vol. VII, No. 490; Vol. VIII, No. 529).

Two months later I was invited by the Society of American Foresters to read a paper before it on *The Petrified Forests of the United States*, to which I had given so much attention. The meeting was held at the house of Mr. Gifford Pinchot in Washington, on March 13, 1902, and I there used all the slides relating to petrified forests, silicified wood, internal structure, etc. I had had special slides made showing my diagrammatic sections through the Trias of Arizona, the petrified forest, etc. Besides these I amused the company by exhibiting the three diagrams of plant evolution, and the dial of the cosmic day.

Since leaving Washington in 1906, and giving up paleobotanical work, I have once exhibited certain of these views. The Franklin Society of Providence invited me in the fall of 1906, to read a paper before it, illustrated if possible. I gave the title as: *Sympodial Development*, and the date was fixed for February 12, 1907. I ran through a good many slides and set forth that principle quite fully in the light of the several extinct floras.

On May 10, 1911, Professor Charles Wilson Brown, Professor of Geology in Brown University and State Geologist of Rhode Island, asked me to give three lectures to his classes on the evolution of plant life illustrated by lantern views, and I consented to do so. They were to be given in his large lecture room in the basement of Sayles Hall at 10-20 A.M. His classes were large and he combined several, besides inviting students from other departments. Quite a number of my students in sociology attended, some from the botanical and biological departments, and others from the engineering department. An announcement was inserted in the *Daily Brown Herald* for May 12, but unfortunately it failed to state that the lectures were to be illustrated.

The first lecture was delivered on May 12, and Professor Brown presided at the lantern. The views came out well and the lecture was a success. I began at the bottom of the scale with the Silurian, and showed how Prototaxites illustrated sympodial development. In that lecture I reached the Carboniferous. In giving it I read largely from the manuscript resulting from

my Chicago lectures. The second lecture was delivered on May 13. I now abandoned the manuscript in order to gain time, and advanced as far as the Cretaceous. I further illustrated sympodial development and exhibited the linden twigs that I use in my classes in sociology. The third lecture was given on May 19. I reached the rich Miocene flora, but was unable to go farther. It was decided to allow me to finish in a fourth lecture, which was arranged for May 26. In that I reached the end of my series of views, and had time to exhibit and discuss the view showing the evolution of the genus Ginkgo, the three views from my *Sketch of Paleobotany* (see supra, Vol. IV, No. 208), illustrating plant evolution in general, and also to show and comment briefly upon the dial of the cosmic day.

Such is a brief history of one of the most active phases of my scientific career, and for all of which there is nothing to show in print but the little note that follows, which I wrote because I thought it would interest some persons, purposely leaving it anonymous. I will now briefly recapitulate this history by giving the dates of the lectures and places where delivered.

Dec. 19, 1890.—*American Forests in Geologic Time*. Catholic University of America, Washington, D. C.

July 3, 1891.—*Vegetation of the Ancient World*. National Chautauqua, Glen Echo, Maryland.

April 24, 1893.—Same title as last. University of Rochester.

April 25, 1893.—Same title. Cornell University, Ithaca.

Jan. 8 & 10, 1895.—*Some of the Remarkable Extinct Floras of Ancient North America*. Peabody Institute, Baltimore.

March 18, 1896.—*Vegetation of the Ancient World*. All Souls Church, Washington, D. C.

Oct. 18, 19, 21, 22, 23, 1897.—*Evolution of the Plant World as shown by Paleobotany*. University of Chicago.

July 23, 29, Aug. 5, 10, 11, 1898.—*Plant Evolution*. University of West Virginia, Morgantown.

Oct. 23, 1899.—*Evolution as seen in the Geological History of Plants*. Stanford University, Cal.

Oct. 31, 1899.—Same title as last. University of California, Berkeley, Cal.

Jan. 13 & 16, 1902.—*Floras of the Past*. Woman's College, Baltimore.

March 13, 1902.—*The Petrified Forests of the United States*. Society of American Foresters (at residence of Gifford Pinchot), Washington, D. C.

Feb. 12, 1907.—*Sympodial Development*. The Franklin Society. Providence, R. I.

May 12, 13, 19, 26, 1911.—*Evolution of Plant Life*. Brown University, Providence, R. I.

Ibid., p. 138.

MR. LESTER F. WARD delivered two lectures on Jan. 8 and 10 before the Peabody Institute of Baltimore, on the *Vegetation of the Ancient World*, illustrated by over fifty lantern views. These were arranged in such a manner as to pass in review in their ascending geological order all the fossil floras known from the Silurian to the Pleistocene. The greater part of the illustrations were drawn from American material, and all the great plant bearing horizons of North America were represented by groups of typical and characteristic forms. Special attention was given to the wonderful fossil forests of this country, and especially of the National Yellowstone Park. The fossil flora of the Potomac formation, and particularly that of the State of Maryland and the City of Baltimore, were duly emphasized. Interspersed with these more scientific illustrations there were thrown on the screen a number of the magnificent ideal landscapes conceived and executed by the great scientific artists, Unger, Heer, Saporta and Dawson. The lectures were well adapted to give to the general public a systematic and comprehensive view of the forms of plant life that have inhabited the earth and especially those that have flourished in America throughout the past ages of geological time.

March 29, 1895—Ætat. 53.

377. The Mesozoic Flora of Portugal compared with that of the United States

History.—Written December 20, 1894 to January 26, 1895. Read in part before the Biological Society of Washington, January 26, 1895. I first set out to write a review of Saporta's work: *Flore fossile du Portugal*, completed and sent me after I met him in September, 1894, when I examined the collection, and I finished it as such on January 18, 1895. But I had been obliged to make it pretty long for a review, and had failed to touch some important points. I therefore decided to make an article of it and considerably enlarge it, which I proceeded to do. I sent it to *Science* with some misgivings as to its being adapted to that journal, and stating that it might be divided and made into two articles, but Dr. Cattell wrote me a very flattering letter, saying it was just the kind of article he wanted for *Science*, and made it a leader.

Saporta died while it was in press. I was in the field in Alabama at the time, and as soon as I learned the fact I sent on a footnote to be inserted, but it was too late. At a later date (see *infra*, No. 386) I wrote quite a biographical sketch of him. I further expanded parts of this article in my memoir on *Some Analogies in the Lower Cretaceous of Europe and America*, published in the *Sixteenth Annual Report of the U. S. Geological Survey*, 1894-'95, Part I, pp. 510-540, pl. cvi-cvii, with diagrammatic sections and tables of distribution (see *infra*, Vol. VI, No. 421). I received a long letter from M. Choffat, dated December 3, 1895. He had been to Aix to look after his collection, but found it entirely neglected.

Ibid., No. 13, March 29, 1895, pp. 337-346.

March, 1895—Ætat 53.

378. [The True Rôle of Competition]

History.—Remarks on the paper on *Competition as a Basis of Economic Theory*, by Professor Frederick C. Hicks, read December 27, 1894. This paper gave me another opportunity to ring the changes on the same great truth that I had been emphasizing so many years, and had fully worked out in my vice-presidential address to the Economic Section of the A. A. A. S., at its Rochester Meeting in 1892 (see *supra*, Vol. IV, No. 331), thus anticipating Huxley's Romanes lecture by one year. The stenographer's report was received and revised by me toward the end of January, 1895. Proof was read on March 1, and the volume appeared soon after.

Handbook of the American Economic Association, 1895, Report of the Seventh Annual Meeting, Columbia College, December 27-29, 1894. Publications of the Am. Econ. Assoc., Vol. X, No. 3, Supplement, New York, March, 1895, pp. 84-85.

March, 1895—Ætat 53.

379. The Relation of Sociology to Economics

History.—Remarks on the paper with this title by Dr. Albion W. Small, read December 28, 1894. The stenographer's report was received and revised January 25, 1895. It was at this meeting that Dr. Simon N. Patten made his famous attack on sociology to which I have referred. He has since written several sociological books, is a member of the American Sociological Society, and is regarded, especially abroad, as a leading American sociologist. This report is only an abstract of what I really said, especially in answer to Dr. Patten. I treated him humorously, and caused a general laugh at his expense. (For a second attack on this problem, see *infra*, Vol. VI, No. 460).

Ibid., pp. 113-116.

380. William Bower Taylor

History.—Written April 7, 1895. Dr. Frank Baker, who was closely associated with Mr. Taylor at the Smithsonian Institution, and at the time editor of the *American Anthropologist*, asked me on March 13, to write an obituary. I did so the next day and sent it to him. On April 7, he called again and said he had mislaid my note and could not find it, and that he was ready to go to press with the *Anthropologist*. So I wrote another, perhaps quite different. I was very fond of Mr. Taylor and we had had many interesting discussions. There is nothing exaggerated in what I said of him here.

The *American Anthropologist*, Washington, D. C., Vol. VIII, No. 2, April, 1895, p. 184.

MR. TAYLOR was born in Philadelphia in 1821, and was a graduate of the University of Pennsylvania. He first practiced law in Philadelphia; was then an examiner and afterward librarian of the Patent Office. In 1878 he became connected with the Smithsonian Institution as editor of its publications. He was specially known as the editor of the scientific writings of Professor Joseph Henry; also by his work on Henry and the Telegraph. He was a well-known member of the Anthropological and Philosophical Societies of Washington. He died in Washington, February 25, 1895.

Mr. Taylor, although primarily a physicist, was widely informed on all the deeper topics of general science. His mind possessed a delicate sensibility to suggestion from others, and was influenced wholly by the inherent merit of the suggestion and not at all by the supposed competency or incompetency of the person making it. Still, on most questions he had settled convictions, and on nearly all important subjects he possessed original ideas, the result of prolonged independent thought. His conversation was particularly charming from the fact that it combined great learning and originality with the utmost simplicity and a complete absence of dogmatism. In a word, his entire character illustrated how extremely liberal genuine wisdom can afford to be.

June 11, 1895—Ætat. 53.

381. Static and Dynamic Sociology

History.—Written December 6–23, 1894. I was stimulated to write this article by the confusion which was shown to exist on the subject by the replies to Dr. Howerth's question, and on November 18, 1894, I wrote to Dr. Dunning, Editor of the *Political Science Quarterly*, proposing to write such an article, and asking whether it would be suitable for that journal. He replied that he would be glad to consider such an article, and I proceeded to write it. The rough draft was completed on December 19. I attended the meeting of the American Economic Association in New York during holiday week and took the article with me to look up certain references in the library of Columbia University, and these I inserted in the manuscript, which I handed to Professor Giddings on December 29. The article was formally accepted by Dr. Dunning on February 10, 1895, with apology for the delay, and promise that it would appear in the June number.

The title was written *Statical and Dynamic Sociology*, but after the proof had been read on April 18, Dr. Dunning wrote to inquire whether I had any special reason for saying "statical" instead of "static," suggesting that a change would be in the interest of euphony. It happens that "statical" is the more usual form, while "dynamical" is very rare. I had simply followed usage, but I saw no good reason for insisting on this, and I readily consented to the change. In Washington there had been a sort of "craze" about this, a number of scientific men, including Major Powell, insisting that the syllable *al* was always redundant, and that whenever used, it always meant the same as when omitted. I had combated this view and maintained that in some cases there was a difference in the meaning, and that

generally the syllable *ic* referred to the essence of the thing, while the ending *ical* denoted simply a relation to it. My chief illustration was the words *historic* and *historical*, an "historic society" being one that had become historic or famous, while an "historical society" is a society for the study of history. Nevertheless, these innovators had founded the "National Geographic Society," which name I regarded as a misnomer, since that would imply a restricted geographic area for the society, and not a society for the study of geography. I joked the members about it, and asked them what a "microscopic society" would be! There are some still more striking examples, such as "politic" and "political," in which the accent is changed, and "economic" and "economical." All this may have influenced me in using the form "statical," but the difference here is less than in most cases. In my reply to Dr. Dunning I mentioned a few of these facts.

The number of the *Political Science Quarterly* containing the article appeared on June 11, and I received my reprints on June 29. These were promptly distributed.

The article was generally regarded as a clear statement of the distinction between static and dynamic phenomena, and especially between social phenomena of these orders.

Dr. René Worms in his Latin thesis: *De Natura et Methodo Sociologiæ*, Paris, 1896, p. 59, ventured, in a long footnote, a criticism of my article. In this he falls into the prevalent error, partially entertained by Comte, of regarding physiology as dynamic, in contradistinction to anatomy, which all recognize as static. Since physiology simply deals with function, as anatomy does with structure, and as function is the sole object of structure, both must be static. I said as much in the article, but in my paper on *La Mécanique Sociale* (see *infra*, Vol. VII, No. 476) I discussed the whole subject and gave references to the authors and their works who had treated it.

I made this article the subject of the ninth lecture delivered at the Hartford School of Sociology on November 6, 1895, but I read it from the rough draft which I preserved and still possess, probably adding considerable to it.

Political Science Quarterly, New York, Vol. X, No. 2, June, 1895, pp. 203-220.

I.

THE terminology of social science is at the present time in process of formation. It seems to be pretty generally agreed that Comte's word "sociology" is the best name for the science as a whole; but how the science shall be subdivided and what names shall be given to the subdivisions, are questions by no means settled. The real cause of this unsettled terminology is a lack not only of uniformity but of clearness in the views of different writers upon, and teachers of, the subject.

As one of a considerable number who think that the primary subdivision should be into static and dynamic, I shall attempt in this article to indicate the boundaries which it seems to me proper to set to these two departments. The division, of course, is not my own. It was first employed by Comte, who, notwithstanding his adoption of the name sociology, preferred to consider the phenomena of society as constituting a science of "social physics," and as capable, like those of the inorganic world, of being contemplated in both their static and their dynamic aspects. Mathematician as he was, he sought to carry the subdivision employed in mechanics into this most complex field of phenomena.

Social dynamics [he says] studies the laws of succession, while social statics seeks those of coexistence; so that the general application of the first is properly to furnish to practical politics the true theory of progress, at the same time that the second naturally forms that of order.¹

Mr. Herbert Spencer in his *Social Statics*, even as "abridged and revised" in 1892, nowhere attempts to explain the scope of the term he adopts as the title of his work, but admits that his original use of it was due, though indirectly and unconsciously, to Comte. The work itself has so little to do with systematic sociology that we may accept the statement of one of its reviewers that the name seems to have been chosen "only as a means of indicating vaguely that it proposed to treat of social concerns in a scientific manner."² In criticising Comte, Mr. Spencer has, however, said:

Respecting M. Comte's application of the words *statics* and *dynamics* to social phenomena, now that I know what it is, I will only say that while I perfectly understand how, by a defensible extension of their mathematical meanings, the one may be used to indicate social *functions in balance*, and the other social *functions out of balance*, I am quite at a loss to understand

¹ Philosophie Positive, 3d edition (Paris, 1869), vol. iv, pp. 263-264.

² North British Review, XV, 321 (August, 1851).

how the phenomena of *structure* can be included in the one more than in the other.¹

Passing over other attempts to define static sociology, I will confine myself to noting some recent definitions by American writers. Small and Vincent, in their *Introduction to the Study of Society* (page 66), say:

The conception of static sociology, to which the method of this book leads, corresponds in form, but not in content, with that of Herbert Spencer; it is the doctrine of the "equilibrium of a perfect society." This use of terms is in sharp contrast with that of Comte.

They define sociology as "the science of social ideals," and add:

It is a qualitative and approximate account of the society which ought to be. By universal consent inquiry about what ought to be has been made the task of ethics. Static sociology is, therefore, an ethical discipline. Social statics is, in brief, social ethics.

I will not say that I do not agree with this, but simply that I do not understand it.

Mr. Ira W. Howerth has recently asked² the principal students of social science in this country whether they approve of the subdivision of sociology into descriptive, static and dynamic. Of twenty-three answers received he says that nine are in favor of such a subdivision and fourteen are "opposed," but he does not inform us how these fourteen would subdivide it, if at all. Dr. Small, in his answer, substantially repeats the definition of static sociology above quoted, by calling it "the ideal of society in equilibrium, essential social structure and needs being the criterion." Dr. Ross says that static sociology "seeks to distinguish social types and the forms of institutions, in order to determine the laws of their coexistence and sequence." Professor Dewey says: "Statical, I consider the principles of social organization as such; the structural relations, the morphology."

Most of the authors above quoted also give definitions of dynamic sociology, but I pass these over for the present and speak first of the static side. This I wish to emphasize the more, as it is the side to which I have given little attention in my works. Since nearly all the scientific work thus far done in sociology has been in that field, I have hitherto purposely omitted to treat it; but I have never been at a loss to separate it clearly from the other. Now that the dynamic side is beginning to receive attention, it seems to me that most writers confuse

¹ Reasons for dissenting from the Philosophy of M. Comte. Appendix to *The Classification of the Sciences* (London and New York, 1864), p. 44. Also, *Essays Scientific, Political and Speculative* (New York, 1891), II, 135.

² *Annals of the American Academy of Political and Social Science*, V, 119 (September, 1894).

it with the static and that there is great need of making clear the fundamental distinction between the two. While the definitions quoted above doubtless contain much that is true, and do, in a manner, mark off the two departments of scientific sociology (descriptive sociology is only the work of the collector), still they do not seem to me at all satisfactory, and they fail to reach the fundamental principles upon which the distinction rests. Without discussion of the definitions, therefore, I will now proceed to set forth briefly what I conceive those principles to be.

II.

The deeper truths of a complex science are, as a rule, much more clearly apparent in the simpler science upon which it rests. The leading criterion of a true science is the recognition of the natural forces in obedience to which its phenomena appear. So long as botany and zoölogy consisted entirely in collecting and labeling specimens, they were not entitled to be called sciences; but as soon as form and structure began to be studied, which was necessary even for the rudest classification, law was recognized; and law is only the expression of the uniform inherent forces.

Now, in the entire animal kingdom, which of course includes the human species, the most fundamental antithesis in phenomena is between those of *feeling* on the one hand and of *function* on the other. Feeling is the one distinguishing characteristic of the animal world. In the celebrated phrase of Linnæus: "Minerals grow; plants grow and live; animals grow, live and feel."¹ For the first time we here encounter a psychic attribute, and throughout the entire range of animal, human and social operations, we must deal with this, which is the only true psychic force. Our distinction between the static and the dynamic begins right here, and it never leaves this primordial base. Feeling is the force of the sentient world; it is equally that of the social world. It is the spring of all activity and that without which no proper action can take place; for motion or movement in inanimate bodies is called action only in a metaphorical sense, as borrowed from feeling beings. Everything connected with feeling is therefore primarily dynamic. The equilibrating principle resides in organization. Unorganized force is ineffectual. Organization has for its end the creation of forms which concentrate and inhibit forces and ultimately expend them with economy in intensifying effects. These forms are the various organisms that people the earth. Human

¹ Lapidés crescunt; vegetabilia crescunt et vivunt; animalia crescunt, vivunt et sentiunt. *Philosophia Botanica* (Stockholm, 1751), p. 1.

beings are the most highly organized of these, and by dint of his intelligence man has become the most numerous of all the developed races. Biotic organization culminates with man, but social organization goes on without change in the principle, and not only creates a great variety of social and political bodies by the orderly grouping of individual men, but also establishes a multitude of effective institutions as the social machinery through which economic results are accomplished.

Processes which relate to the production of organisms, social organizations and human institutions are broadly grouped under the head of function. The object of organization being to store energy,—i.e., to bring the psychic forces into a state of equilibrium, so that they can be economically drawn upon and directed into efficient channels, leaving a reserve for future use,—it is clear that, from the very definition, function is essentially static. And here again, as in the case of feeling, there is no stage in the entire range of vital and social organization at which this ceases to be true.

The organized product adapted to economize force consists exclusively of appropriate structures; therefore the study of structures, whether physical or social, is static. Structures exercise functions, and it is these functions that sustain, continue and mitigate life. All this is also purely static, and in general it may be said that all considerations of structure and function are static. The object of function is essentially the preservation of forms. It has nothing to do with their modification. That a particular organism shall preserve its existence as long as its inherent powers of duration permit, is the first law of functional life; and this is secured by the process called nutrition. That before the limit of duration is reached it shall provide for the renewal of its form in other individuals of its kind, is the second law; and this is secured by the process called reproduction. But involved in these processes, and equally belonging to the domain of static phenomena, are the respective facts of growth and multiplication. That an organism, through abundant nutrition, shall increase in size, or that a species, through fecundity, shall increase in numbers, does not alter the general law according to which these processes go on. This is a common stumbling-block to writers on these subjects, who are apt to confound mere growth or simple multiplication with properly dynamic phenomena. This has been done in a conspicuous manner by Mr. Benjamin Kidd in his *Social Evolution*, in which all along the growth of population is confounded with "progress." The same kind of mistake is made by Messrs. Small and Vincent in their *Introduction to the Study of Society*, where, at the beginning of Book IV (page 237), after clearly and accurately premising that "social activities have their source in the desires of individuals," they wrongly proceed (§114) to

apply the term "social growth" to "progress" and "evolution." This is simply to confound static and dynamic sociology. Merely *quantitative* change is static. In dynamic phenomena the change is *qualitative*.

It is easy to see that in biology the greater part of all that has been done, beyond the necessary accumulation of data for study, has been in its static department. All studies of structure (anatomy, histology, morphology) and function (physiology) must be so classed, and some may be at a loss to see what remains. In sociology, though much less has been done, the same is practically true. Sociologists rarely overstep the border of social statics. When they take up the laws of preservation or sustentation, they at once find themselves confronted by the "social organism"; and thereupon they devote themselves either to analyzing the structures of the several organized bodies of society—states, churches, business associations, *etc.*—or to investigating the social operations that produce and distribute the nutritive pabulum of society; that is, they confine themselves to the anatomy and the physiology of society. If they enter the field of the reproductive forces, they encounter on the threshold the institution of marriage and that primary social structure, the family, and rarely go beyond these. All ethnological studies, as of the customs, mythology, religion and arts of primitive peoples, their government, their proprietary laws, and their tribal relations, also belong to this class. Here again it might be supposed that the list was exhausted. And yet we frequently find in the midst of this static work the treatment of topics, such as political revolutions, religious reforms, and the reversal of economic opinion, which clearly belong to social dynamics.

III.

If, then, the static phenomena of sentient life are so clearly marked off and easily recognized, what are the criteria of its dynamic phenomena? Going back to our primary antithesis, we see that they are those that grow directly out of the fundamental fact called feeling. Compelled as we are by the defectiveness of language, due in turn to the defectiveness of human knowledge when language was formed, to express genetic truth in teleological phrase, we may say, without danger of being misunderstood by the well-informed, that the end of nature and that of the organism are not the same, but are entirely distinct. Nature aims only at the preservation of the organism and the continuation of the race. The organism, on the contrary, knows nothing of these ends and has no concern for them. The opposite view which prevails is an illusion. The sole end of the organism is the satisfaction of its desires, which is that

which yields pleasure. More accurately speaking, every organism is engaged during its entire life in the business of pursuing pleasure and avoiding pain. If we call the pleasures *plus* and the pains *minus*, the end which the organism has singly in view is to attain the maximum algebraic sum of these conscious states. This is what is meant by feeling as an end.

Now, the conditions under which life has been developed have been such, and could only have been such, that the pursuit on the part of the organism of its end is that which secures the ends of nature. Feeling is adapted to function. Only such desires could be developed under the laws of survival as tended to preserve and perpetuate the creatures possessing them. This to the biologist is a full explanation of the existing state of things, and no other "preestablished harmony" is required. If, therefore, the creature does but seek its own ends, those of nature will take care of themselves.

The mere action necessary to the satisfaction of desire is the primary dynamic element, but it would be little effective if satisfaction followed immediately. In fact, this rarely or never happens, and in the great majority of cases there intervenes the state called *effort*. The organism is perpetually striving to attain its ends. The efforts put forth are often intense and prolonged. The activity manifested is great and the energy expended is correspondingly great. This expenditure of energy has its results quite independent of those of function. Even if the end be not attained, these results are secured. In fact, the more remote and difficult the end, the greater the direct effort applied to removing the difficulties; and the maximum effect is reached in those enlightened human activities in which the attainment of the end depends upon careful calculations and patient elaboration of the means.

In its broadest sense the word dynamic may be taken to describe an advantage, benefit or good, independent of both the individual (feeling) and the race (function)—something that is useful to the world at large or to the general scheme of development or evolution. That is to say, it does not benefit that individual or that race, but institutes processes that are to benefit many or all individuals and races. The direct effects of activities, the results of efforts to secure the ends which the individual has in view, are dynamic in this sense. So far as either nature or the organism is concerned they are incidental and unintended. They have significance and value only to the world at large; in short, they form the elements, and the sole elements, of progress.

But here a precaution is necessary, and a more exact term than progress is needed. The antithesis between the static and the dynamic requires to be still more incisively drawn than has yet been done. We have seen that both growth and multi-

plication belong to the department of statics. What is the corresponding fact in the department of dynamics? "Progress" is not always sufficiently comprehensive, and "evolution" is open to the same objection. In biology this fact is expressed with considerable accuracy by the word *transmutation*. So long as the type remains the same, the phenomena, whatever they may be, are static; there is permanence and stability. The law that works for this permanence of type is called *heredity*. The counter-law that antagonizes heredity and works for instability is called *variation*. Under the harmonious operation of these two antithetical laws *development* has taken place. Variation is primarily due to intense, prolonged and often unsuccessful efforts on the part of organisms to secure their ends. The necessity for such efforts is due to the imperfect adaptation of the organism to its environment. The efforts¹ bring about a more perfect adaptation through modifications in the type, and this usually, but not always, secures an advance in the type. This is development. If, however, a lower type is better adapted, the result is degeneracy. In either case it is transmutation. In either case it is a dynamic phenomenon.

It would be easy to expand this part of the subject and show that all the transformations that have taken place in the animal world have been the result of such efforts on the part of the creature for the attainment of its ends.² Some idea of the vivifying influence that springs from the study of any science on its dynamic side may be gained by a comparison of what biology has become since Darwin, who may be said to have founded dynamic biology, with what it was under Cuvier, when the dynamic principles of Lamarck were treated with disdain. What Darwin taught is not so much the origin of species as the transmutation of species. He diverted attention from life structures to life movements. Just as geologists, before Hutton and Lyell had established the uniformitarian law of dynamic geology, regarded the earth's crust as stationary and accounted for changes that they perceived had taken place by the doctrine of cataclysms, so pre-Darwinian biologists, with a few notable exceptions, regarded species as fixed, and accounted for variety and multiplicity of organic forms by the doctrine of special crea-

¹ The word "efforts" is not used here in a strictly Lamarckian sense, but is intended to include all modifications due to natural selection and the mingling of different ancestral germ plasmata that tend to variation. All these conditions of change are due to the universal *nisus* of life, pressing everywhere for more perfect adaptation, which may properly be characterized as effort. Darwin himself, who cannot be suspected of not clearly seeing the indirect influences, characterized it as the "struggle of the favored races," or the "struggle for existence," but it would be more accurately described as a struggle for the satisfaction of desire.

² I have done this to some degree in *Psychic Factors of Civilization*, chap. xiv, to which I venture to refer the reader.

tion in each case. The revolution in geology was not more complete than that in biology. The static laws of both still remain, but it needed the dynamic laws also to make the two sciences complete. Both the static law of heredity and the dynamic law of variation are summed up in the happy phrase of Darwin, "descent with modification."

Is anything analogous to this in store for sociology? Surely this youngest of the sciences need not complain if it is compelled to wait yet a long time in its static stage. But the world moves, and the history of other sciences proves that this too must possess a dynamic department. The search for the key to it has already begun, and if rewarded with success, will doubtless reveal the secret of social evolution. That the dynamic principle must reside in the affective department of man's psychic nature, admits of no doubt; and that it should be essentially different from that of all other life, is not to be expected. A slight modification of the terms and the substitution of synonyms more applicable to the human sphere of action are all that is required. If the lower organisms seek pleasure—so does man, but we may call it happiness. If desire is their sole motive power—so it is his, but we may call it want. Efforts and satisfactions are the same in both spheres, only, as already remarked, the former are much more prolonged in a being that can foresee future results, and the dynamic effects are correspondingly increased. These effects are transmutations and adaptations in the one case as in the other, but here we encounter an essential difference. In the one case the organism is transformed to adapt it to the environment; in the other the environment is transformed to adapt it to the organism. In so far as we deal with physical modifications in man's bodily structures, we are treating of dynamic biology. When we deal with modifications in his surroundings and in his relations to the universe, we are treating of dynamic sociology.

All social structures may be embraced under the general term *institutions*. Social functions are the operations conducted by institutions. Institutions, like bodily structures, are exceedingly numerous and multiform, and social functions are correspondingly manifold and varied. Looked at for any given point of time, they seem stationary; but viewed from the standpoint of history, they give evidence of continuous though slow and uneven change. Compared with the changes going on in organic structures the modifications of social structures are, it is true, very rapid; but to those who see and are trying to remedy defects the persistence of social structures seems to be needlessly great. Dynamic sociology is the science which considers this change in social structures and functions. There is a principle in society called *conservatism*—corresponding to that of heredity in biology—which tends to preserve social

structures. Their very existence, as in organic structures, is a proof of their usefulness, and their destruction, or even their modification, is strenuously resisted. But no structure is ever perfectly adapted, and all must ultimately reach a point at which the adaptation begins to grow less and less. The time at length arrives when change is essential to continued existence. In societies, no less than in races of animals, those which cannot change must perish. The persistence of social structures is that which we understand by social order. The change of social structures in the direction of greater adaptation is social progress, and this must be true even though it require a lower type to secure the adaptation. Such cases, however, are rare, and progress in society, like development in the organic world, is in the main an advance in the direction of perfecting the types of structure. As a rule these advantageous modifications take place gradually and imperceptibly, though seldom at a uniform rate; but the rhythm is often more marked, and long periods of stagnation are followed by what are called reforms or even revolutions.

In a general way all this has been recognized, but very few attempts have been made to arrive at the initial principle according to which these qualitative changes in the types of social structure take place. Bastiat struck the keynote when he said that the whole science of man could be summed up in the three words: wants, efforts, satisfactions.¹ But really the last of these factors, though the end of the other two, would be fatal to movement if it followed immediately upon the first. Want is the motive power to all social phenomena—the real social force, but all change is the result of effort, and would attend it even if satisfaction were not attained. Comte utters the purely dynamic truth even more correctly when he says that “mental activity [which he explains in the next sentence not to mean the higher speculative activities of the mind] is only persistently maintained by the continued pressure of the various human wants, the immediate satisfaction of which is happily not possible without persistent efforts.”² Herbert Spencer has recognized the same truth³, and in fact it forms the basis of what is true in individualism, in defending which he and other writers have made an entirely unwarranted appli-

¹ “Besoins, efforts, satisfactions, voilà le fond général de toutes les sciences qui ont l’homme pour objet.” *Journal des Economistes* for September, 1848, vol. xxi, p. 110. The article (pp. 105-120) is entitled: “Harmonies Economiques,” which is also the title of the sixth volume of his complete works (Paris, 1854). The second chapter of this volume (pp. 40-54) is entitled: “Besoins, Efforts, Satisfactions,” and consists of the article considerably expanded, but does not contain the sentence quoted. The article and chapter as a whole are somewhat disappointing when read from the present standpoint.

² *Philosophie Positive*, vol. iv, p. 224.

³ See his *Principles of Biology* (New York, 1873), vol. ii, p. 499 (§373).

cation of it. Professor Clark sees it in its proper light,¹ and several of the replies to Mr. Howerth's question embody the germ of it. For example, Professor Dewey says: "Dynamic is the theory of social movement as such; the functioning of the organs so far as they involve *modifications of structure*." Dr. Ross also says: "Dynamic studies the forces underlying social phenomena and causing *movement* and change." Still more recently² he has slightly elaborated his view and furnished some examples, showing a clear grasp of what may be called economic uniformitarianism.

The principle according to which efforts become so important is that their influence is not confined to the individual, but extends to all individuals and to society at large. Just as in biology it is not the particular organism or the particular race, but the organic world in general that is benefited by the struggle for existence, so in the social sphere it is neither the individual nor his direct family or line, but society at large that is the recipient of the advantageous consequences of dynamic activities. In breaking a new way to the satisfaction of a particular individual's wants, a means is secured of satisfying like wants of all other individuals, and they appropriate it and reap the benefits. Just as the pioneer who cuts a road through a forest and goes on, never to use it again, is soon followed by others until it becomes a great highway, so the results accomplished by the efforts of the individual, though only useful to him for the time being, remain as the initial steps in the material civilization of the world. A dynamic action is one that affects not merely the primary agent at the particular time, but all other agents for all time. Such actions are sometimes called "fructifying causes." They are pregnant with future consequences. Static actions leave matters in the same state after as before their performance. Dynamic actions create a new state in which small efforts produce relatively great results. The routine work of the housewife in preparing meals, washing dishes, making beds and cleaning house, is purely static, and must be done over and over again each day in a perpetual round with no ulterior effects; but one who organizes new and improved methods of housekeeping or invents labor-saving machines and utensils is engaged in dynamic work, which economizes social energy and husband's the strength of thousands forever afterward. Charity work is chiefly static and supplies only temporary and ever-recurring wants. The highest philanthropy consists in such deeds as tend to diminish the number of indigent persons and thus to render charity unnecessary.

This principle applies with equal force to all three of the

¹ *Philosophy of Wealth*, p. 56.

² *University Extension* for November, 1894, vol. iv, p. 138.

primary classes of social wants—the life-sustaining, the life-continuing and the life-mitigating forces. The first of these classes constitutes *par excellence* the field of political economy, or social economics, since it relates directly to the means of subsistence. In this department the dynamic point of view is that of *consumption*. The older economists almost completely ignored this factor, recognizing it, if at all, only to deny its legitimacy as a part of political economy. Mr. John Stuart Mill probably reflected the consensus of opinion on this question when he said: “Political economy . . . has nothing to do with the consumption of wealth, further than as the consideration of it as inseparable from that of production, or from that of distribution.”¹ But some of the economic writers of our day have begun to understand the true meaning of consumption, and are working along that line. As early as 1871 Professor W. Stanley Jevons, after intimating that “dynamical branches of the science of economy may remain to be developed,”² proceeds to say:

Political economy must be founded upon a full and accurate investigation of the conditions of utility; and to understand this element we must necessarily examine the character of the wants and desires of man. We first of all need a theory of the consumption of wealth.³

Gen. Francis A. Walker approached the problem in the following language:

The chief interest of political economy to the ordinary reader, its chief value to the student of history, must be in the explanation it affords of the advance or the decline of the productive power of nations and communities; and it is only in the consumption of wealth that we find the reasons for the rise of some and the fall of others, from age to age.⁴

It is seen by such writers that from the standpoint of the individual the sole object of production and distribution is the satisfaction yielded in consumption, and that although the individual cares nothing for benefits that accrue to society from his efforts to attain that satisfaction, still these efforts do furnish such benefits, advantageously modifying human institutions and thus causing social progress.

The second primary group of social wants, the life-continuing forces, are still unrecognized in their dynamic aspect. And yet fully one-half of the energy of society is expended in this direction. It is not conceived that anything scientific can be coupled with such a passion as love. This field is turned over exclusively to the poets and romance writers. These, however,

¹ Essays on some Unsettled Questions of Political Economy, 1st edition (London, 1844), p. 132, footnote.

² The Theory of Political Economy, Preface, pp. viii-ix.

³ *Ibid.*, p. 46.

⁴ Political Economy (New York, 1883), pp. 298-9 (§329).

probably produce more literature than all other writers combined, and their books are greedily devoured by millions who do not know what science means. A well-conceived romance constitutes one of the best illustrations of the distinction between social dynamics and social statics. It represents the former exclusively. It paints the passion and records the struggle, but satisfaction once attained, it ends. In scientific phrase, it deals with a social want and the effort to supply it; but when these culminate in the social institution, marriage, and crystallize into the social structure, the family, the romance is ended, and the scientific treatise may begin. Yet it is through these prolonged and eventful struggles—the wooings and waitings, the rivalries and jealousies, the chivalry and constancy, the obstacles and disappointments—that character is formed, heroism displayed, labor performed, wars waged, empires founded, fame achieved, and the face of nature transformed.

The third primary class of social wants, the life-mitigating forces, are chiefly derived from the other two, and represent the surplus energy that any given social state may afford after satisfying these. They are the æsthetic, moral and intellectual cravings of civilized men. The efforts put forth for the realization of ideals of beauty, righteousness and truth are the noblest that life elicits, and from them flow art, beneficence and intelligence. The study of these highest aspirations of the soul and the dynamic transformations that attend them is clearly a thing apart from the study of the institutions to which they give rise, considered as finished products.

IV.

To sum up, then, the test of a static phenomenon is that it shall relate to function, *i.e.*, shall have directly or indirectly to do with some one of nature's ends in sustaining, continuing or mitigating life. This includes all structures and the metabolic processes necessary to maintain, renew, increase and multiply them, but not the conditions which change or modify them. Social structures are institutions, in the broadest sense of that term, and static sociology embraces the study not only of the nature of institutions, but of all that they accomplish in their normal capacity—their anatomy and physiology. However well it may be known that they are undergoing change, this must be left out of view, and they must be studied as so many facts, *i.e.*, contemplated as fixed, just as the systematic botanist or zoölogist contemplates the species of plants or animals.

Sociology as a science recognizes society as a theater of forces, and this as well in its static as in its dynamic aspect. The three primary groups of social forces are the life-sustaining, the life-continuing and the life-mitigating wants. These result

in organization, and the purpose of organization is the production of mechanisms for economizing energy. Such mechanisms accomplish their object by securing an equilibrium of forces, and the study of social forces in equilibrium is static sociology.

The organs adapted to sustaining social life are chiefly those institutions within the scope of political economy that may be studied from the standpoint of their nature or of their action—anatomically or physiologically—both of which studies belong to static sociology.

The organs adapted to continuing social life are chiefly marriage institutions and the family, but they may be studied comparatively and made to include all forms of marriage and the whole subject of kinship. So long as these various institutions, no matter how diverse in different nations and ages, are considered as they actually are, or as they were at any given time, and not as in process of transformation, the limits of social statics are not transgressed.

The organs adapted to mitigating social life include all the institutions that cluster round art, religion, ethics, literature and science. Each of these vast fields is capable of being studied in its static aspects as a product of social organization.

In sharp contradistinction to all this, the test of a dynamic phenomenon is that it shall relate to feeling and shall have to do with the direct effects of action in the effort to satisfy want, *i.e.*, with the ends of the individual in some one of the three primary classes. The effects themselves are incidental and unintended so far as the ends of the agent or of nature are concerned, but they constitute the only element of change in the types of structure.

In society these changes serve to adapt man to his surroundings, to modify and reform human institutions, and in general to cause social progress. Dynamic as well as static sociology deals with the social forces, *i.e.*, with social wants; and in the one case as in the other these are divisible into such as respectively sustain, continue and mitigate life. The dynamic factor in each is effort. In the first the satisfaction comes in the act of appropriating, or, in economic phrase, of consuming. This stimulus leads to every form of economic movement, and is what makes the wealth of nations. In the second the stimulus not only prompts the greatest deeds, but, what is more important, its quiet universal working makes the homes of all lands. In the third we see the simultaneous development of art, religion, morals, education, science and industry. All these movements in harmonious coöperation work the changes that go on in social institutions, and constitute what is known as social progress.

It may be remarked, in conclusion, that there has been a perceptible tendency during most of the nineteenth century to break away from the objective or static standpoint in thought

and to consider things in their subjective or dynamic aspects. This tendency has manifested itself in all the higher departments of science. The great biological revolution has already been referred to. In psychology it took the form of a transfer of attention from thought to feeling, from intellect to sense. Kant led the way by recognizing the subjective aspect of mind (*Sinnlichkeit*) as worthy of scientific study, though he did not himself study it, but Schopenhauer, embodying it in the term *Will*, made it the "thing-in-itself," and revolutionized the philosophy of mind. Bain's study of the emotions and the will and Spencer's estho-physiology gave this side of the subject the sanction of science, and led the way to modern experimental psychology. In sociology Comte insisted upon the "affective" faculties as a factor in social physics, and in his later writings elaborated his *philosophie du cœur*, which as eminent and conservative a psychologist as Professor Wundt, notwithstanding the prevailing opinion, declares not to indicate a diseased mind.¹ All these influences, coupled with the universal study of the sub-human stage of life, where feeling is well-nigh supreme, worked a great change in the standpoint from which everything was to be viewed, amounting to little less than an *Umwertung aller Werthe*. The economists who are founding a dynamic economics, based on consumption as the prime factor, may imagine that they are independent of these influences; but in such a supposition they are greatly mistaken. They may not have gone back to learn the sources of their thoughts, but the air is full of the new philosophy, and they have simply drawn from the common reservoir. They are as much the creatures of the modern *Zeitgeist* as was the author of *Dynamic Sociology* in 1883, and the entire movement is one of the clearest examples of the dynamics of mind.

¹ See Heinrich Waentig, *Auguste Comte und seine Bedeutung für die Entwicklung der Socialwissenschaft* (Leipzig, 1894), p. 92.

June 28, 1895—Ætat. 54.

382. Remarks on the Genus *Caulinites*

History.—The paper as read before the Biological Society of Washington on June 1, 1895, was entitled: *Remarks on the Genus Caulinites Brongn., with exhibition of specimens*. It was not a written communication, but I passed round my specimens and copies of Brongniart's plates in the works cited, and commented upon the resemblance. On June 4, Mr. F. A. Lucas, Secretary of the Society, called on me for a summary of my remarks to send to *Science*, as was the custom, and I dictated them to him.

I may add that in my note-book for April 27, 1895, in recording the expedition to Great Falls, I made the following entry: "I found rhizomes of *Tripsacum* just like *Caulinites* and got some good specimens."

In a subsequent correspondence with Dr. Arthur Hollick on this subject I urged him to work it up into a paper and publish drawings of my specimens along side of reproductions of Brongniart's figures, and he consented to do so. On January 6, 1897, I sent him the specimens. At his leisure he prepared the paper and published it in the *Torrey Botanical Bulletin* for December of that year.

Science, New Series, New York, Vol. I, No. 26, June 28, 1895, pp. 725-726.

PROFESSOR LESTER F. WARD exhibited specimens of the rhizomes of the Gama Grass, *Tripsacum dactyloides*, obtained at Great Falls, Md., on April 27th, which bore a striking resemblance to fossil forms described under the name of *Caulinites*, Brongn., and especially to *C. parisiensis*, Brongn., from the Eocene of the Paris Basin. He exhibited figures of that species to show this resemblance.

The genus *Caulinites* was first figured by Desmarest, who

supposed it to be a polyp and named it *Amphitoites parisiensis* in Nov. Bull. de Sci., Société Philomathique, tom. II., pl. 2. This figure was reproduced by Cuvier and Alex. Brongniart in Essai sur la Géographie Minéralogique des Environs de Paris, pl. II., figs. 10 A. and 10 B., 1811, and has been repeated in all later editions. A large number of very fine specimens were collected subsequently, and Adolphe Brongniart had no doubt but that it represented the impression of a plant. In his 'Tableau,' 1849, p. 86, he placed it under a plant genus which he renamed *Caulinites*, from the genus *Caulinia*, of de Candolle, a name antedated by *Posidonia*, Kön., an aquatic plant related to the river-weeds, *Potamogeton*, and sea wracks, *Zostera*, in the *Naiadaceæ*. When Watelet, in 1866, undertook the elaboration of all the material in the Paris Museum from the Eocene of the Paris Basin he devoted several plates to illustrating this and other species of the same genus.

Prof. Ward stated that when he saw the rhizomes he was forcibly struck with their resemblance to the figures of Desmarest and Watelet. A comparison of them showed that in many respects they were not only similar but practically identical, although among Watelet's figures are some which deviate considerably from this type. A large number of similar forms have been found in various deposits, chiefly Tertiary, throughout the world, and more than 50 species of *Caulinites* have been named, many of which will, of course, prove to be synonyms, while others depart so widely from the normal type that they will require to be excluded.

Prof. Ward said further that in 1887, Prof. Lesquereux described a species collected by Mr. Geo. F. Becker at Clear Lake, Cal., under the name of *C. Beckeri*. Proc. U. S. Nat. Mus., Vol. X., p. 36, pl. I, fig. 3, pl. II, figs. 1-4. Mr. Becker stated that he had supposed these rhizomes to belong to the common Tule, *Phragmites phragmites*, (L.) Karst., the deposit being a very recent one in the bed of a dried-up pond where the Tule was supposed to have grown as it now grows in those regions.

Prof. Ward remarked in conclusion that he had found other, similar, rhizomes washed up along the Potomac, but was unable to say to what plant they belonged, but enough is now known to make it certain that a considerable number of grasses, and perhaps rushes and other monocotyledonous plants, possess rhizomes with short joints resembling or practically identical with those of the genus *Caulinites*.

July, 1895—Ætat. 54.

383. Christian Sociology

History.—Written January 20, 1895. I had received the following communication:

BIBLIOTHECA SACRA. EDITORS: G. FREDERICK WRIGHT, E. SWIFT HOLBROOK
OBERLIN, OHIO, Jan. 15, 1895.

DEAR SIR:

Owing to the wide diversity of opinions upon the propriety of using the word "Christian" as applied to "Sociology" in the phrase "Christian Sociology," we desire a concise statement of your views upon the question on the enclosed postal card with permission to publish the same in the April Number of the BIBLIOTHECA SACRA.

Thanking you in advance, we are,

Respectfully yours,
THE EDITORS.

I dashed off this note in a great hurry on their postal card, making it intentionally so cavalier and unsympathetic that they would not publish it. On May 13, I received the proof with a letter dated April 26, saying that it would appear in the July number with one hundred others, and begging me to subscribe. I returned the proof "with comments," but what the "comments" were I have now no idea. I paid no further attention to the matter until I reached it in preparing this series, when I encountered it at its proper date and recognized that it came under the rule for insertion here. I therefore wrote on March 7, 1910, for that number and received it March 11. The symposium is rather noteworthy. It occurs in an article by Mr. Holbrook entitled: *What is Sociology?* occupying pages 458-504 of the volume for 1895, the first part (much more than half) of which consists of the numerous replies to the same question that was addressed to me, alphabetically arranged, while the

second part contains Mr. Holbrook's discussion of the same. Among the writers are many prominent names. The symposium is a distinct contribution to sociology, and is not, I think, at all familiar to sociologists. I am glad of this opportunity to draw attention to it.

Bibliotheca Sacra, Oberlin, Ohio, July, 1895, p. 482. Vol. LII.

I AM in the habit of considering Sociology to be a science, not a religion, cult, or programme of action, and therefore "Christian Sociology" sounds to me about as would "Christian Mathematics," "Mohammedan Biology," or "Buddhistic Chemistry." If it is no better than Christian Astronomy, Geology, and Geography used to be in the days when such things were recognized, it is a rather poor article.

July, 1895—Ætat. 54.

384. Relation of Sociology to Anthropology

History.—Written April 28 to May 16, 1895. This was the fourth of my Hartford lectures, but as it related to anthropology and was read before the Anthropological Society, the editor of the *American Anthropologist* claimed the right to publish it. It thus came out earlier than any of the other lectures. In former papers on the origin of man I had always been emphasizing the physical traits that ally him to the animal world, but I had been long collecting cases in which man differs from animals, and especially those that I had been calling "distinctively human characteristics," real or alleged. I commenced on April 23, 1895, to classify these for treatment in this paper. But the number was so great that I could introduce only the most important. This enumeration occupies 11 of the 16 pages of the article.

I turned the manuscript over to Dr. Frank Baker, Editor of the *Anthropologist*, on June 17; the proof was read June 30, my reprints were ready on July 9, and the July number containing the article appeared on July 24. On November 2, I used it as my fourth lecture at the Hartford School of Sociology, but I expanded the general considerations and did not have time to deal with the "distinctively human attributes." Dr. Small's

scheme for an *American Journal of Sociology* was matured early in the summer of 1895, and he had asked me to contribute. I had been writing out these Hartford lectures, delivered orally in the fall of 1894, as a course of six lectures, and which Dr. Horttrauft had asked me to repeat in 1895 as a course of 12 lectures. I had offered to contribute them to the new journal, and the first two had already appeared in the July and September numbers. The third appeared in the November number. As the present one, No. 4, had already been published in the *Anthropologist*, I wrote to Dr. Small on November 8 explaining the circumstances and proposing to send it on without the long discussion of human attributes. He agreed to this, and it appeared in the number for January, 1896, thus condensed, with the title: *Sociology and Anthropology*. Contributions to Social Philosophy, IV. It forms Chapter IV of the *Outlines of Sociology*, and will therefore be omitted here.

The following note represents the attitude of competent anthropologists relative to this paper:

MEDIA, PA., Oct. 28, 1895.

Thank you for the separate of your article on the "Relation of Sociology to Anthropology." I like your reasoning, and your clear and brief presentation should dispel the fog about the subject—were it not that most prefer the fog to stay.

Yours truly,
D. G. BRINTON.

The American Anthropologist, Washington, D. C., Vol. VIII, No. 3, July, 1895, pp. 241-256; The American Journal of Sociology, Chicago, Vol. I, No. 4, January, 1896, pp. 426-431; Outlines of Sociology, New York, 1898, Chapter IV, pp. 64-89.

July, 1895—Ætat. 54.

385. The Nomenclature Question

History.—Written June 5–8, 1895. The absurdities of botanical nomenclature had been apparent to me from the beginning of my botanical career. The movement in America for its improvement began early in 1892, and the action of the Botanical Club of Washington, mentioned near the end of this paper, was among the first steps. I did not attend the meeting of April 23, 1892, and was placed on the committee in my absence, but I attended the special meeting of May 7. It met in the Reading Room of All Souls Church with a small attendance. The committee had drafted resolutions and submitted them for discussion. I observed that in the second paragraph no reference was made to the law of priority, and I moved its introduction as the first item, which was unanimously agreed to.

From that time on I took a lively interest in the subject, and in the fall of that year I had some correspondence on it with Dr. N. L. Britton, who became the great apostle of a radical change. Mr. Coville in Washington also espoused the new views, and he and others frequently brought me problems for my judgment. By the beginning of 1895, the matter had assumed an acute stage and two opposite schools had arisen, a radical and a conservative party of botanists. Cambridge was the seat of the conservatives and New York that of the radicals, the leaders being respectively, Mr. B. L. Robinson, who practically stood in the shoes of Dr. Asa Gray, and Dr. N. L. Britton, who might similarly, though in a different sense, be regarded as the successor of Dr. Torrey. The conservatives had published and distributed the circular, introduced later in this history, entitled *Recommendations Regarding the Nomenclature of Systematic Botany*. It was signed by many of the leading botanists of the country. Many of the signers had evidently

given very little attention to the question and had no clear principles in view. The progressists must do something to offset this move, but the active leaders were averse to personal participation in the discussion. They saw the need of some strong voice from a relatively disinterested quarter, and they seemed to see in me the Moses that should lead them out of the wilderness.

On March 9, 1895, Mr. Coville approached me on the subject. They wanted a strong article for the *Torrey Botanical Bulletin* in reply to the Harvard circular. The matter came up at several meetings of the Biological Society of Washington, and on May 4, Mr. Erwin F. Smith, who, though he had signed the report of the committee of the Botanical Club, had also signed the Harvard circular, read a paper in defense of the latter. I took part in the discussion of his paper, and there was no unfriendly feeling aroused. On May 27, Mr. Coville told me that he had corresponded with Dr. Britton on the subject and that there was a general desire that I write the article. I told him that I had not the time to collect the necessary data, as I was preparing to take the field in a few days. He said he would have the data collected for me and would give me a stenographer to whom I could dictate the article. I finally consented and indicated what data I would like to have. Dr. F. H. Knowlton and Mr. Charles L. Pollard volunteered to collect the data, and Dr. Knowlton prepared the table relating to ornithology. The table facing page 317 of the article was also prepared by these gentlemen. Finally on June 5, I indicated that I was ready, and Mr. Coville sent me his stenographer, Miss McClure, a very intelligent young lady, and I dictated to her the entire afternoon without finishing.

She came the next day at 2 P.M. with all I had dictated the previous day nicely typewritten, and I proceeded to finish dictating the article. It was all engrossed on June 7, but needed careful revision, which I gave it on the two following days. The opening joke was an afterthought and was inserted at the last minute. I then left it in the hands of Messrs. Coville, Knowlton, and Pollard to insert the tables and put the whole into shape. I soon left for the South and did not return till July. On July 2, the proof arrived. The article as thus composed did not contain the last two paragraphs nor the report of the original committee of the Botanical Club of Washington. When this was called to my attention it struck me that it would be well

to insert it, and I wrote to Dr. Britton on July 9, for his opinion. He approved of it and I sent on the matter which was duly embodied in the page proof and forms part of the article.

After the article was in type I received a letter from Dr. Britton dated June 19, 1895, from which I extract the following:

"I have read it [the article] through with the keenest interest, and do not hesitate to express the opinion that it is the ablest argument for stable nomenclature that I have seen. Botanists owe you a debt of gratitude for its preparation and I wish to express my appreciation of the work. If you have no objection I will cause a reprint to be mailed without comment to all the persons who signed the document recently issued from Cambridge. I am rather confident that it will bring a number of them to a different line of thought."

I replied that I ought not to be given credit for the whole of it, as I had had so much assistance from others, and that if I had been at home to attend to it I would have inserted some acknowledgment of this assistance. But it seems that all concerned were so much interested in the effect it was to produce that they willingly waived their claims to any part in it and agreed that this would lessen the effect. In Britton's next letter he said:

"I am confident that the argument will be much stronger by your consenting to father the whole of it than if the names of the combine appear."

I received many strong congratulatory letters, a considerable number of which were from botanists who signed the Harvard circular. Two from those who did not sign that document may be first mentioned.

Prof. John M. Coulter wrote under date of Sept. 13, 1895:

"I want to congratulate you upon your paper on nomenclature. It is the most philosophical presentation of the subject we have yet had, and should do much towards quieting matters."

I will give Professor Atkinson's letter in full:

CORNELL UNIVERSITY, ITHACA, N. Y.,
Aug. 19, 1895.

Prof. LESTER F. WARD,
Washington, D. C.

DEAR SIR:

I have just finished reading your article in the *Torrey Bulletin*, and wish to say that it has given me great satisfaction to see the subject presented

in such a candid, impartial, and dispassionate manner. With perhaps some minor exceptions it seems to me unanswerable, though there will probably be no lack of "words" arrayed against it. It is in very sharp contrast in many respects with a private pamphlet recently distributed, which seems very difficult to bring into harmony with the signatures introduced at the close.

Very respectfully yours,

GEO. F. ATKINSON.

President Jordan wrote me as follows:

"Please accept my thanks for your excellent paper on 'The Nomenclature Question.' It is sound and right to the point. It seems strange to an outsider that Botanists do not profit more by the experience of Zoologists, and especially by the history of Systematic Ornithology, in these regards the most advanced branch of Zoology."

Of the signers of the Harvard circular who wrote me I may mention Professors Farlow, Fowler, and Wheeler. Their letters are all appreciative, some of them apologetic, and none of them strongly opposed to my presentation of the subject. They were disposed to lug in irrelevant subjects, such as the mania for multiplying new names. Professor Farlow of course sees matters from the standpoint of the fungologist, which is admitted to be somewhat different from that of the ordinary botanist. His letter is long and deals with details.

As the subject cannot be fully understood without reading the so-called Harvard Circular I introduce it here as part of the history of this paper.

RECOMMENDATIONS REGARDING THE NOMENCLATURE OF SYSTEMATIC BOTANY.

We, the undersigned, feel constrained to protest against the recent attempts made in the United States to change botanical nomenclature on theoretical grounds. In our opinion most of the suggested changes, even if they were generally adopted, could lead only to great confusion. An explanatory statement of the reasons, which compel us to take this action, is herewith briefly given.

So far as the nomenclature of systematic botany is effective it has been and should be developed only in intimate relation to scientific investigation, and must be subject to constant modification with varying ideas of plant-affinities. Although attempts may be made to control its growth, its real development, especially as to generic names, is largely determined by usage. By judicious recommendations greater and greater uniformity in the application of botanical

names may doubtless be obtained, but to make rules¹ at serious variance with the customs of the past and to give them retroactive effect can only tend to complicate botanical language. For even if we depart from the nomenclature of former writers we can by no means avoid the constant necessity of using their works. Guided as to nomenclature by general custom writers of the last hundred and fifty years have accumulated the vast quantity of facts and produced the voluminous literature of our science. While its nomenclature is by no means uniform, it is with unimportant exceptions readily intelligible to working botanists. To reform this nomenclature upon theoretical grounds will not alter the importance of works of the past, which are likely always to remain the historic basis of classification. Thus the result of any serious change would be the necessity of acquiring two sets of names instead of one. Realizing keenly how serious would be the burden thus imposed not only upon systematists but upon all who are interested in any branch of botanical research as well as in the more practical aspects of the science such as pharmacy and horticulture, the undersigned urge postponement of any radical measures of reform.

One of the most essential features of an efficient botanical nomenclature is a cosmopolitan character. It is very unlikely, therefore, that any lasting or satisfactory modification of the present system can be effected without international agreement.² Whether this can be obtained and can lead to practical and generally acceptable results remains to be seen, but certainly until the subject can have further international consideration it is likely that radical changes will do much more harm than good. The recent suggestions for reforming botanical nomenclature in the United States are not in accord with the usage of any other nation nor are they in the light of recent foreign publications likely to meet with favor, to say nothing of general adoption outside of our own country. Even if the proposed reform could be carried out in America it would thus give a most unfortunate local tendency to scientific expression and thereby do much to stultify the whole system of Latin nomenclature, which has been elaborated largely for international convenience. For the present, therefore, serious changes cannot be too scrupulously avoided, and as a basis of publication the following rules are recommended as those most conducive to stability without the disadvantages of a more rigid code. These rules are designed to apply only to phænogams and vascular cryptogams. Botanists of all departments, however, are constantly obliged to make use of phænogamic names, and all are therefore more or less concerned in the preservation of a convenient phænogamic nomenclature.

1. Ordinal names, having been established by long usage, should not be subjected to revision upon theoretical grounds.
2. Long-established and generally known generic names, such as *Liatris*,

¹ For example, the recently proposed principle of "once a synonym always a synonym" and the still more arbitrary ruling that a variety and species may not hold the same name under one genus.

² From the published statements of prominent German and Austrian botanists there is every prospect that the whole subject of botanical nomenclature will meet with early consideration by a representative international congress to be convened at an early date.

Desmodium, *Dalea*, *Calycanthus*, *Carya*, *Aspidium*, and others, should be retained. While the scope of this rule is left to the discretion of writers, it is urged that generic nomenclature should not at present depart far from that of the three important works, Bentham and Hooker's *Genera Plantarum*, Baillon's *Histoire des Plantes*, and Engler and Prantl's *Natürliche Pflanzenfamilien*, from which for some time to come our most complete and accurate information, as to generic limits and affinities, is to be derived.

3. In specific nomenclature the first correct combination is to be preferred. The theoretical reason for this is clear. The specific name is adjectival in its nature, and parted from its generic noun, loses its significance. Moreover, the transfer of a misplaced plant to its correct genus is in general a more important service than its description under an incorrect genus, and the first correct combination of generic and specific names is, therefore, justly worthy of regard. But the most important reason for adopting this ruling lies in the practical stability to be derived from it. For in nearly all cases the first correct combination can be definitely ascertained. On the other hand, if there is any departure from this principle and any attempt to combine earlier specific names with those of the accepted genera, there must be a lasting doubt as to the validity of nearly all post-linnæan specific names. For very few of them can be so securely established that they will be free from constant danger of being displaced by the discovery, in some obscure work, of slightly older names used perhaps under remote genera. Added to this inherent lack of stability the unqualified adoption of the first specific name leads to indefiniteness through the constant endeavor to base our nomenclature upon more and more remote, fragmentary, and obscure descriptions of the past, such as those of Rafinesque, while in general the first correct combinations, having been formed in more recent times when generic and specific limits were better understood, have been based upon or accompanied by fuller descriptions, forming a much sounder foundation for nomenclature. For these reasons it seems best to adopt the principle of priority under the genus, the whole question of determining in individual cases the proper scientific name being thus greatly simplified, since all competing names are under the same generic designation. It is to be emphasized, however, that this ruling does not lessen the obligation of botanists of the present and future in making a transfer of a species from one genus to another to preserve scrupulously the specific name without alteration, except in the case of an existing homonym.

4. The varietal name is to be regarded as inferior in rank to the specific. The variety is the least definite category of classification and varietal names have not only been treated with much greater laxity than the specific, but are generally unindexed, so that it would be a work of years to collate them. To bring them (as advocated by certain recent works) into active competition with specific names would thus tend immeasurably to increase the difficulties of an ultimate settlement of specific nomenclature. The rule that a variety may not hold the same name as a species in the same genus is highly arbitrary, and would lead not only to the renaming of thousands of varieties, but the practical impossibility of using in large genera like *Aster*, *Solidago*, *Senecio*, *Solanum*, and *Carex* any telling descriptive names for varieties, since all such have long since been used for species.

No specific name should be altered, because of preexisting varietal names for the same plant. Nevertheless, it is recommended as a working rule that whenever a variety is raised to specific or a species depressed to varietal rank the name should be preserved whenever possible.

5. The principle of "once a synonym always a synonym," while recommended as an excellent working rule for present and future, may not justly be made retroactive.

Signed:—

C. L. ANDERSON	J. FOWLER	C. V. PIPER
L. H. BAILEY ¹	B. T. GALLOWAY	A. N. PRENTISS
W. W. BAILEY	W. F. GANONG	C. G. PRINGLE
M. S. BEBB	A. GATTINGER	E. L. RAND
E. BRAINERD	G. L. GOODALE	C. ROBERTSON
T. S. BRANDEGEE	G. U. HAY	B. L. ROBINSON
W. H. BREWER	T. HOLM	J. T. ROTHROCK
T. J. BURRILL	J. M. HOLZINGER	F. L. SCRIBNER
D. H. CAMPBELL	J. E. HUMPHREY	W. A. SETCHELL
A. W. CHAPMAN	H. G. JESUP	A. B. SEYMOUR
J. W. CHICKERING	M. E. JONES	C. E. SMITH
D. CLEVELAND	F. D. KELSEY	E. F. SMITH
C. S. CRANDALL	T. H. McBRIDE	J. D. SMITH
A. H. CURTISS	G. MCCARTHY	J. G. SMITH
L. L. DAME	J. M. MACFARLANE	V. M. SPALDING
G. E. DAVENPORT	J. MACOUN	W. N. SUKSDORF
A. DAVIDSON	J. M. MACOUN	W. T. SWINGLE
D. F. DAY	T. MEEHAN	R. THAXTER
W. DEANE	A. NELSON	J. W. TOUMEY
W. R. DUDLEY	C. R. ORCUTT	S. M. TRACY
D. C. EATON	L. H. PAMMEL	M. B. WAITE
W. H. EVANS	S. B. PARISH	H. J. WEBBER
D. G. FAIRCHILD	H. N. PATTERSON	C. F. WHEELER
W. G. FARLOW	G. J. PEIRCE	W. P. WILSON
J. FLETCHER	D. P. PENHALLOW	

¹ This signature is qualified by the following reservation: As a statement of the principles or theory of binomial nomenclature, I concur with the above argument, but I am unwilling to subscribe to any code until it shall have been carefully considered by representative assemblies of botanists of the country or the world. Binomial nomenclature is but a special form of language, and all permanent progress in language, as in all other human institutions, is known to be the result of an evolution or growth of the new out of the old. I am convinced that mere arbitrary and artificial standards—such as those lately

In the Introduction to Britton and Brown's *Illustrated Flora*, New York, 1896, Dr. Britton discusses the subject of Nomenclature (Vol. I, pp. viii-x), and goes over part of the ground covered by my paper. In a footnote on page ix he says: "For a fuller discussion of this subject see articles by Professor Lester F. Ward, in *Bulletin of the Torrey Botanical Club*, 22: 308-329, from which the above summary is mostly taken," etc. [enumerating several other articles, mostly growing out of mine].

**Bulletin of the Torrey Botanical Club, New York, Vol. XXII, No. 7, July, 1895,
pp. 308-329.**

proposed—cannot have an abiding value. In fact, in the immediate application of them they may admit of as many variations and errors of judgment as the methods do which they are designed to supplant. The starting-points of the proposed new nomenclature seem to me to be more vague and uncertain than those of the old. This is particularly true of the use of the oldest specific name as compared with the use of the oldest complete name or combination. I therefore believe that usage is the only foundation upon which an enduring and intelligible structure can be built.

August 9, 1895—Ætat. 54.

386. Saporta and Williamson and their Work in Paleobotany

History.—Written July 15–20, 1895. I stated in discussing an earlier paper (*supra*, No. 377) that I learned of the death of the Marquis Saporta while on a geological expedition in Alabama and sent a footnote to *Science* announcing it, but it arrived too late for insertion, as the number containing my article had already been printed. In the letter of Dr. Cattell dated April 4, 1895, in which he expressed his regret at this state of things he added: "I shall be glad if you will consent to write for *Science*, at your convenience, some notice of Saporta and his work." I had been thinking of doing this when the news of the death of Professor Williamson reached me early in July. I received a letter from his son, Herbert C. Williamson, informing me of the death of his father, in which he said: "My father was so exceedingly glad to be able, after all, to meet you last summer." This decided me to write a sketch of both of the eminent paleobotanists.

I commenced getting together the data for such a sketch on July 13, and soon brought it to completion. On receiving the manuscript Dr. Cattell wrote me under date of July 23, 1895:

"I am under the greatest possible obligations to you—as every one who reads it will be—for the article on Saporta and Williamson. *Science* has not been able to print anything more appropriate to its scope, nor more welcome."

I arranged for reprints in brochure form and distributed them quite freely. Among the letters received in acknowledgment may be mentioned one from Mr. Jules Marcon, who knew Saporta personally. I sent a copy to Mr. Herbert Williamson, but for some reason he did not show it to his mother, and she only learned of its existence through Mr. Seward. She had

read his copy and wrote me a very genteel note begging me to send her one, which, of course, I did immediately; indeed, I sent her several copies.

Professor Williamson had invited me to visit him at his home in Sussex, but I had not been able to do so. Mrs. Williamson, in her letter says:

"My husband was almost as disappointed with your inability to visit us in Sussex as he was delighted to meet you in the Kew Laboratory."

**Science, New Series, New York, Vol. II, No. 32, August 9, 1895, pp. 141-150;
Covered reprint, New York, 1895, pp. 1-18.**

THE science of fossil plants has lost within a period of less than six months two of its oldest and most eminent cultivators, the Marquis Gaston de Saporta and Professor William C. Williamson, the former of whom died on the 26th of January, at the age of seventy-two years, and the latter on the 23d of June, at the age of seventy-eight years. The immense loss which science has sustained in the death of these two men is only partially lessened by the fact that they were not cut off, as are so many men of promise, in the prime of life, but were spared to continue to a ripe age their valuable labors. The monument that each has erected for himself is greater and more enduring than any that others can ever erect for them.

Having been in direct communication with both of them for a full decade and having been also, to a limited extent, personally acquainted with them, I have felt it a duty to science, and especially to that branch of science which I have cultivated most, to speak a word from this side of the Atlantic in recognition of their services.

THE MARQUIS SAPORTA

In a paper in which I contributed in 1885 to the Fifth Annual Report of the U. S. Geological Survey (p. 383), and in which I gave brief sketches of the principal workers in paleobotany, I attempted to review Saporta's work, as then known to me, from an acquaintance with his scientific contributions. This sketch was exceedingly defective and did poor justice to his merits, but was the best I was able to make at that date. Aside from the grave omissions there made, it must be said that his labors were far from being completed, and in the last ten years of his life he produced many of his most important works. It is not always safe to judge an author by the number of titles that his bibliography contains, but for an author all of whose contributions are certain to be of value to science, this criterion has considerable

weight. I have been able to collect together about 150 titles of Saporta's works, several of which are volumes elaborately illustrated, and two of which consist of long series of exhaustive and painstaking papers.

I shall attempt here to mention only a few of the leading subjects to which the Marquis Saporta devoted his energies. He was born at St. Zacharie, Department of Var, in the South of France, on the 28th of July, 1823, and christened Louis Charles Joseph Gaston. As his name indicates, he was of Spanish descent and belonged to one of the oldest families of the nobility of that country that are so frequently met with in this part of France. We are informed by his illustrious coworker, M. R. Zeiller,¹ that he was in more or less direct communication during his boyhood with the eminent entomologist, Boyer de Fonscolombe, his maternal grandfather, and that his own father also cultivated entomology to some extent. This may have tended to inspire in him a taste at least for scientific study. But this atavistic taste did not develop in early life, and prior to the age of 30 he devoted himself chiefly to literature and history. At about that time he was accidentally brought into relations with the founder of paleobotany, M. Adolphe Brongniart, who had been interested in certain fossil plants from Tertiary beds near Saporta's home at Aix and from Manosque. This appears to have given the special bent to his mind which determined the labor of the rest of his life, and thenceforward to the time of his death he devoted himself unceasingly to the study of fossil plants, and largely to those rich fossil floras which he has made known in Provence. A letter which he wrote to M. Charles Th. Gaudin, and which the latter published in the 6th volume of the *Bulletin de la Société Vaudoise des Sciences Naturelles* for April 18, 1860, shows clearly that he had already at that date been a long time engaged in the collection and study of the fossil plants of Provence, but this seems to have been his earliest contribution on the subject of fossil plants. These already rather full notes were greatly expanded and published the following year in Gaudin's translation of Heer's *Researches on the Climate and Vegetation of the Tertiary*, which forms a part of the 3d volume of Heer's *Tertiary Flora of Switzerland*, the French translation being published separately.²

These papers were merely preliminary to the extensive series which began to appear the next year, viz., his *Etudes sur la Végétation du Sud-est de la France à l'Epoque tertiaire*. This series was published in the *Annales des Sciences Naturelles, Botanique*, beginning with the 16th volume of the 4th series,

¹ *Revue générale des Sciences*, Paris, 15 avril, 1895, p. 359.

² *Recherches sur le Climat et la Végétation du Pays tertiaire*, par Oswald Heer, traduction de Charles Th. Gaudin, Winterthur, 1861. B. *Examen des flores tertiaires de Provence* par M. Gaston de Saporta, pp. 133-171.

1862, and concluding with the 9th volume of the 5th series, 1868, and embracing 13 distinct papers, all profusely illustrated by beautifully prepared lithographic plates. Four years later he made a complete revision of this work in three similar papers which appeared in the 15th, 17th, and 18th volumes of the same serial, 1872-1873. In 1888 he returned to this subject and published his 'Dernières Adjonctions' in two papers in the 7th and 10th volumes of the 7th series of the same work. In this exhaustive treatise the Tertiary flora of the South of France has been made as well known to science as is its living flora.

While in the midst of the studies of the Tertiary flora of southern France he undertook another even more ambitious work, being nothing less than a complete monograph of the Jurassic Flora of France to be published in the great paleontological serial, the *Paléontologie Française*. This monumental work was issued in fascicles to the number of forty-seven, beginning in January, 1872, and ending in July, 1891. It was finally published in four large volumes, with an aggregate of over 2000 pages and 300 plates, royal octavo. It is a complete systematic treatise on the entire Jurassic Flora of France, from the Infralias or Rhetic to the Purbeck, and like all Saporta's works, which differ in this respect from those of most paleobotanical authors, it is founded upon a most careful study of the living vegetation of the globe.

It seems almost incredible that in the midst of these great labors Saporta should have found time for anything else beyond a few minor contributions; but not only was the number of these latter large and their magnitude often considerable, but several of them rise to the dignity of important works. Among such are to be mentioned his classical memoir on the Fossil Flora of Sézanne,¹ at the extreme base of the Tertiary; the still more extended monograph of the Pliocene Flora of Meximieux, Department of Ain, in which, however, Professor A. F. Marion of the University of Montpellier was associated with him;² a fine essay on the Flora of Gelinden³ in Belgium, a formation in the extreme Upper Cretaceous, which appeared in 1873, with a revision of the same⁴ in 1878, in both of which, as in the one

¹ *Prodrome d'une Flore fossile des Travertins anciens de Sézanne*. Mém. Soc. Géol. de France, 2e Sér., Vol. VIII, Paris, 1868, pp. 287-438, pl. xxii-xxxvi.

² *Recherches sur les Végétaux fossiles de Meximieux*, par le Comte G. de Saporta et M. le Dr. A. F. Marion; précédées d'une introduction stratigraphique par M. Albert Falsan. Archives du Muséum d'Histoire naturelle de Lyon, Vol. I, Lyon, 1876, pp. 131-335, pl. xxi-xxxviii.

³ *Essai sur l'État de la Végétation à l'Époque des Marnes heersiennes de Gelinden*, par le Comte G. de Saporta et le docteur A. F. Marion. Mém. Cour. Acad. roy. Belgique, Vol. XXXVII, No. 6, Bruxelles, 1873.

⁴ *Révision de la Flore heersienne de Gelinden*, par le Comte G. de Saporta et le Dr. A. F. Marion. Op. cit., Vol. XLI., No. 3, Bruxelles, 1878.

last mentioned, Professor Marion assisted him; the handsome volume which he published in 1879, entitled, *Le Monde des Plantes avant l'apparition de l'homme*, which is a popular account of the whole subject of fossil plants written in a lucid and fascinating style, and which is to-day the best popular work on the subject and was translated into German by Carl Vogt in 1881; a still larger work somewhat in the same line but much less popular, and in the preparation of which Professor Marion was again associated with him, viz., '*L'Evolution du règne végétal*,' published in three volumes as one of the International Scientific Series, no English translation of which has appeared. The first volume of this work, published in 1881, relates to the Cryptogams, and the second and third, which appeared in 1883 and 1885, respectively, to the Phanerogams. This is the most successful attempt thus far made to trace the development of plants from its earliest beginnings to its latest forms by the aid of paleontology, and if it be true, as is generally admitted, that complete success in this attempt was not attained, it will nevertheless form the basis for all future researches in this line.

Another and very different task was undertaken when in 1882 he essayed to reply to the strictures of Dr. A. G. Nathorst on the nature of the supposed fossil algæ of the earliest rocks. To this controversy he has contributed two elaborate treatises, the first entitled: '*A propos des Algues Fossiles*,' which appeared in 1882 in the form of an illustrated folio volume of 82 pages and 9 plates; and the second entitled: '*Les Organismes Problématiques des Anciennes Mers*,' which is a slightly larger companion volume of 102 pages and 12 plates. This is not the place to discuss the question involved in these works, but no one denies that the Marquis Saporta has here brought forward the strongest evidence that the case will permit for the existence of vegetable remains at these remote periods.

A second popular and very useful work was his '*Origine Paléontologique des Arbres Cultivés ou Utilisés par l'homme*,' a small octavo volume of 360 pages and numerous woodcuts, which appeared in 1888. This work evinces a wide acquaintance with the dendrology not only of Europe but of the world, and is based mainly upon the author's profound knowledge of the Later Pliocene and Quaternary floras of France.

Without stopping to mention other works which have almost as much claim as the ones already treated, I will indulge in a final word relative to the work upon which our author was engaged at the time of his death. I allude to his studies in the Lower Cretaceous flora of Portugal. After the death of Oswald Heer, to whom the collections made by the Geological Survey of Portugal from the plant bearing Mesozoic beds of that country had been sent, and who had published one important contribution to the subject, these collections were sent to Saporta, and he

had been engaged upon them, as time would permit, since 1886. In 1888 he published, in the *Comptes Rendus*, a preliminary account of their nature, in which it appeared that there were now being found in the Portuguese beds below the Cenomanian certain dicotyledonous forms which greatly interested the Marquis, since this was by far the earliest appearance in Europe of that type of plant life; although, as was well known to him, we have, in our Potomac flora of Virginia, deposits of still greater age containing such plants. The appearance of this and a still later similar paper on the same subject but without illustrations, taken in connection with the fact that I was at the time actively engaged in the study of the equivalent beds of this country, led to an interesting correspondence, which was kept up until the summer of 1894, when it was my good fortune to pay a visit to the veteran paleontologist at Aix for the purpose of examining the material in his hands with a view to a comparison of the Portuguese forms with those of the United States. My brief sojourn at Aix and at Fonscolombe, as the guest of the Marquis, afforded me the valued opportunity to add to my knowledge of him as a scientific man and a genial correspondent, a glimpse of his personal character, and to learn that along with those sterling attributes which are required to make a man of science there went the generous hospitality, the unaffected simplicity, and the cordial affability that characterize the true nobleman. My reception on that occasion at the Château of Fonscolombe, his country residence, where I made the acquaintance of his interesting family, was of the warmest character, and my brief stay there was in the highest degree enjoyable.

I found that the first instalment of his work on the Portuguese Flora was almost ready to appear, but the material that had reached him since this volume went to press was considerable, and this I was also permitted to see. I need not here repeat the account which I have already given in these columns¹ of the scientific value of this visit and the general nature of the work under consideration. He promised to send me the new volume, together with a number of other works of his which I informed him I had not yet received, but they never came, as the hand that was to direct them was soon stricken and compelled to lay down the pen that had written so many volumes and the pencil that had done more than any other to embellish the science of fossil plants.

His last undertaking seems to have been a work on the fossil Nympheaceæ and two preliminary papers had already appeared in the *Comptes Rendus*. He showed me a wonderful series of specimens and the inimitable drawings of them that he was making.

¹ SCIENCE, New Ser., Vol. I, March 29, 1895, pp. 337-346.

The question naturally arises: Upon whom is the mantle of this eminent investigator destined to fall? In addition to a large amount of posthumous work that is known to exist, much of which is probably nearly ready for publication, there are the large collections which have been sent to him from many sources and which are greatly in need of elaboration.

He left a large family, children and grandchildren, and at least two of his sons have grown to manhood, the eldest, Count Saporta, whose acquaintance I made, as well as that of the Countess, was the private secretary to the Comte de Paris, and even while I was there, he had received a dispatch announcing that the Comte was dying at his place of exile in England, whither he had to repair immediately, and we traveled together to Marseilles. Another married son, the Viscount Antoine de Saporta, has made at least one important contribution to fossil plants, viz., a review of Nathorst's Fossil Flora of Japan¹ based on the original Swedish text before the appearance of the authorized French translation, which was regarded of sufficient moment to call forth a reply from the author.² He may have written still other papers which have not come to my notice. Whether this young man is to follow in the footsteps of his father remains to be seen.

There are two features of Saporta's work which have not been mentioned, viz., attention to bibliographical matters and a tendency to philosophize. For the past ten years Saporta had been contributing most valuable summaries in the entire domain of vegetable paleontology, which were published in the *Revue Générale de Botanique*, under the direction of M. Bonnier. Many of these amount to original contributions and include the description and illustration of new forms.

With regard to his philosophical tendencies it should be said that he allowed the logic of facts to influence his thoughts, and was, from the outset, a consistent exponent of the general doctrine of evolution and the special doctrine of plant development. In addition to the works above referred to, which directly bear upon this subject, and to the general treatment of it in his popular works, he has contributed quite a number of articles to the popular magazines, especially to the *Revue des Deux Mondes*, which have afforded him an opportunity to strike out the broad outlines of a general philosophy. One of the most original of his rational conclusions, and one that is fully sustained by the facts, but almost completely ignored by all other writers, is that the most important subdivisions of the geological scale must be drawn at different points for plant development from those at which they are commonly drawn for animal development.

¹ *Ann. de Sci. Nat., Bot.*, 6th Ser., Vol. XV, 1883, pp. 149-167.

² *Loc. cit.*, pp. 337-341.

For example, the Mesophytic age properly ends with the Jurassic instead of with the Cretaceous, while the Tertiary for fossil plants closes with the Miocene instead of with the Pliocene.

PROF. W. C. WILLIAMSON

In my series of sketches of the leading paleobotanists,¹ referred to above, still greater injustice was done to Prof. Williamson than to Saporta. I was acquainted with his work at that time only from the great series of memoirs which he was publishing in the Philosophical Transactions, and which I was only able to consult in the ponderous volumes of that serial. I therefore limited myself almost exclusively to a mention of that work, 12 numbers of which had then appeared. The earliest paper relating to fossil plants with which I was then acquainted was dated 1842, and I therefore provisionally gave this date as the beginning of his work on fossil plants. I soon after collected titles, some of which go back to 1836,² but in a letter from him dated June 16th, 1886, thanking me for this poor mention of his name, he said:

"Your only mistake is in starting me on my paleobotanical career in 1842, since I am the same W. C. Williamson, Jun., whose name you will find so frequently in the Fossil Flora of Lindley and Hutton. You will see that my labors began in 1833, so that I have now been in the field 56 years—a regular old stager."

I was indeed aware that a 'Mr. William Williamson, Jun.,' had contributed to Lindley and Hutton's Fossil Flora a large number of notes and sketches, all of which had been used by those authors and gratefully acknowledged, and I suspected that this might have been the same Professor Williamson, but as these notes all referred to impressions of plants from the Oolite of Yorkshire, while his chief labors had been on the internal structure of Carboniferous plants, it was natural that I should doubt their identity. I am now happy to be able to correct his correction and show that his absolutely first contribution to that work was made in 1832 instead of 1833.³

¹ Fifth Annual Rept. U. S. Geol. Surv., 1885, p. 376.

² See the Proc. Geol. Soc., London, for Nov. 16, 1836, Vol. II, p. 429.

³ The Fossil Flora of Great Britain by John Lindley and William Hutton, Vol. I, London, 1831-1833 (the first fascicle, pp. 1-48, pl. i-xiv., was issued in 1831 and the second, pp. 49-166, pl. xv-lix., in 1832. His first sketch, which was that of *Cyclopteris Beantii*, constitutes pl. xlv., and is described on pp. 127-129. It was found by his father, but a note signed by 'W. Williamson, Jun.,' on p. 127, shows that he had much to do with it, and although it is not stated that the sketch was made by him, there is every probability that it was. An examination of the entire work shows that he contributed no less than 30 of the species described in it, constituting nearly all from the Oolite of Yorkshire, and that in every case he not only furnished the specimen but an accurate drawing which the authors always used).

The same year in which I received the above mentioned letter there occurred a transaction, which, though trifling in itself, serves in an admirable way to illustrate Professor Williamson's personal character. Being very desirous to obtain the reprints of his memoirs *On the Organization of the Fossil Plants of the Coal Measures*, from the *Philosophical Transactions*, as well as many other works relating to fossil plants, I had prepared an extensive list of such works, including this one, from a catalogue of Dulau & Co., Soho Square, London, and requested the Geological Survey to purchase the books. The invoice arrived substantially complete with the exception of Professor Williamson's work. Much time elapsed and the work did not come, further correspondence showing that it had not been possible to obtain it. I therefore wrote direct to Professor Williamson, begging him if possible to spare a set to Messrs. Dulau & Co., for our use in America. The very next steamer brought the full set direct to me without cost and another characteristic letter, from which I make the following extract:

"Your letter of October 28th has thrown light upon what appeared to me a queer affair. I received an application from Messrs. Dulau for a set of my memoirs; I replied that I had only three spare copies left, that I never had sold a copy and that I much preferred not doing so, since I had rather reserve them and give them to some paleontologists that I knew would make good use of them. * * *

"I am so glad that you have written direct to me about the affair, because yours is precisely the sort of case that I contemplated in my letter to Dulau & Co. I will send the set of 12 memoirs to you and beg that you will accept them from me."

William Crawford Williamson was born November 24th, 1816, at Scarborough, in Yorkshire. We are fortunate in having a most admirable sketch of his life by Mr. Charles Bailey, F.L.S., published in the *Manchester Scientific Student's Annual Report* for 1886, which sets forth the principal facts in connection with his early life and also contains, as a frontispiece, an excellent portrait of him at that date. In this paper Mr. Bailey says:

"Circumstances had made Professor Williamson's father a gardener by profession, but nature had made him a geologist, and placed him in one of her most valuable domains, viz., on the Oolitic and Cretaceous rocks of Yorkshire. The late Professor Phillips tells us in the preface to the third edition of his classical work, *Illustrations of the Geology of Yorkshire*, how he had, in company with his uncle, William Smith, 'the Father of English Geology,' gathered fossils beneath the romantic cliffs of Whitby and Scarborough, but that in 1824 he had the good fortune to become acquainted with two of the most valuable of all his early friends, Mr. William Bean and Mr. John Williamson (the father of the future professor), and to profit by their admirable collections of recent and fossil shells, crustacea, echinoda and corals, dredged from the neighboring sea, or hammered out of the adjacent rocks. The father naturally trained his son William to pursue studies which were so fascinating to himself, and, in consequence, the father and the son became inseparable companions."

But the Williamsons were not people of great means, and the young scientist had to be apprenticed to a surgeon in Scarborough, where he remained from 1832-1835. It was during this period that he furnished the data above mentioned, to Lindley and Hutton's Fossil Flora, but he also published over his own name a number of papers on various other subjects, which displayed a wide knowledge of nearly every branch of natural history. These contributions gained for him the curatorship of the Natural History Society of Manchester, where he remained the next three years. He studied medicine and surgery, and in 1840 became a member of the College of Surgeons, and held several important positions, including that of Active Surgeon to the Chorlton-upon-Medlock Dispensary. In 1851 he became Professor of Natural History and Geology at Owens College, Manchester, and from that time until 1892 he followed the fortunes of this noted institution. Then, at the age of 76, he retired from professional labors in order to give himself up exclusively to his great work on fossil plants.

Professor Williamson's labors were by no means confined to vegetable paleontology, and his contributions to other branches of natural history are only less celebrated than those in this field. Mr. Bailey has passed these labors in review in a very satisfactory manner, and I must refer the reader to this sketch for an account of them, confining myself to the only subject on which I am at all capable of expressing an opinion. In 1842 he wrote upon the Origin of Coal,¹ and in 1854, he returned to the study of the cycadean plant, *Zamia gigas*,² of which he had furnished the sketch for Lindley and Hutton,³ and upon which he finally published an elaborate memoir in 1870.⁴ This was his principal contribution to the external parts of fossil plants. Being an adept at the microscope he turned his attention to their internal structure and found this study so fascinating and so profitable as to allow it to engross almost his entire energies from about the year 1869 to the end of his life.

An important paper appeared in 1869 on the Structure and Affinities of Some Exogenous Stems from the Coal Measures,⁵ and in quick succession during the same and the following years a number of papers describing his studies on the genus *Calamites*.⁶

¹ Brit. Ass. Rept., 1842, Pt. 2, p. 48.

² For such he still modestly called it, although in the paper that immediately follows his in the Trans. Linn. Soc., Mr. William Carruthers renames this plant *Williamsonia*, thus founding one of the best marked genera of fossil plants.

³ Foss. Fl., Vol. III, p. 45, pl. clxv.

⁴ Trans. Linn. Soc., Vol. XXVI, 1870, pp. 663-674, pl. lii-liii.

⁵ Monthly Microsc. Jour., Vol. II, London, 1869, pp. 66-72, pl. xxii.

⁶ Proc. Lit. Phil. Soc. Manchester, Vol. VIII., 1869, pp. 36-38; 153-155; Vol. IX, 1890, pp. 7-9; 76-78; Mem. do., 3d Ser., Vol. IV, 1869, pp. 155-179; 1871, pp. 155-183; 284-295; Vol. V, 1871, pp. 28-46, pl. i-iii., etc.

These papers constituted the natural prelude to his great series on the Organization of the Fossil Plants of the Coal Measures, the first of which related to the genus *Calamites* and appeared in 1871.¹ From this date these memoirs continued to appear in the Philosophical Transactions at the rate of a little more than one each year, so that the last memoir, of which he was the sole author, is No. 19, and is to be found in the 184th volume, published in 1893.

After his removal to London, in 1892, he associated with him the accomplished structural botanist, Dr. D. H. Scott, Honorary Keeper of the Jodrell Laboratory at Kew, and they worked together in the preparation of an additional memoir, which was laid before the Society on December 30, 1893, and an abstract of which appeared in the Proceedings of the Royal Society, Vol. LV, 1894, without illustrations. This memoir relates to *Calamites*, *Calamostachys* and *Sphenophyllum*. At the Oxford Meeting of the British Association Dr. Scott laid before the Botanical Section the principal results of this investigation, accompanied by profuse illustrations projected on the screen. As I had read the abstract before leaving America, I was naturally deeply interested in this paper, which it was my good fortune to hear. I had written to Professor Williamson that I intended to attend the British Association and had received a reply in which he stated that he would not be present, and begged me to visit him at his country cottage in Sussex; which, to my great regret, I was unable to do. But at Oxford I received another letter from him, renewing his invitation and alluding in no uncertain terms to certain tendencies in modern science which he had always deplored. This part of his letter contains so clear an expression of his views on this question which he had never published, that I cannot do better than to quote it here.

"I had intended coming to Oxford to utter my final protest against the growing multitude of Paleobotanical species mongers who are reducing the study of Paleobotany to a state of inextricable confusion. But I concluded that I should only expend my breath for nought and become engaged in angry controversies, hence I resolved to leave the entire race who find pleasure and renown in attaching the mystic 'mihi' to the vast number of unidentifiable fragments that have now been accumulating from the days of Artis, Sternberg and Brongniart to the present day. I refuse to recognize any one of my names given in my numerous memoirs as being *specific*. They are merely convenient terms helping us to identify certain types of organization—any one of which may embrace an indefinite number of true species, if indeed any such have a real existence."

To the discussion of Dr. Scott's paper considerable scope was given, and the question involved in the above extracts from this letter occupied the attention of the members. Being called

¹ Phil. Trans. Roy. Soc. London, Vol. CLXI, 1871, pp. 477-510, pl. xxiii-xxix.

upon by the courteous President of the Section, Prof. Isaac Bailey Balfour, to make some remarks, and having little to say further than to express my great interest in the subject, I felt that I could not better contribute to the discussion than by reading the above extract, which I took the liberty to do.

Although Professor Williamson's labors were so largely confined during the last 25 years of his life to the preparation of this series of memoirs, it must not be supposed that this was all he accomplished. The number of his minor contributions during this period is very large indeed, and several of these papers are of great importance. Especially is this the case with his Monograph of the Morphology and Histology of *Stigmaria ficoides*, published in 1887, which is by far the most complete treatise thus far known on this subject. The total number of his titles, so far as I have been able to collect them together, does not fall far short of 150. This is exclusive of all papers relating to other branches of science, of which there is a great number, including many addresses and lectures. But nearly all of his papers are devoted to setting forth the results of special investigations, chiefly microscopic, upon a great variety of material, which, by the aid of a large corps of trusted collaborators and collectors, he had accumulated in his cabinet. He rarely indulged in philosophic discussion, but on one or two occasions he took a broad view and expressed himself on the larger subjects connected with his life work. This was notably the case in his address on Primeval Vegetation in its Relation to the Doctrines of Natural Selection and Evolution, published in a volume of Essays and Addresses by Professors in Owens College, Manchester, in 1874, and reviewed by Dr. Asa Gray in the American Journal of Science in the same year.¹ To the same class also belonged his Primitive Ancestors of Living Plants and their Relations to the Doctrine of Evolution, published in the Revue Internationale des Sciences Biologiques for September, 1883, but there was scarcely a subject in the whole range of paleobotany which had been prominently brought forward by other writers upon which he had not expressed his opinion.

Only once was it my good fortune to meet Professor Williamson. On the occasion referred to, when I met Dr. Scott at Oxford and had appointed a day to examine with him at the Jodrell Laboratory the microscopic slides of *Bennettites Gibsoni* and other species prepared by Count Solms-Laubach, which were in his hands, Dr. Scott, without my knowledge, notified Professor Williamson of this appointment, and when I reached Kew, to my great delight, I found him there. The two or three hours which I spent in his society can only be characterized as charming. Many subjects were discussed, among the most interesting

¹ 3d Ser., Vol. VIII, pp. 150-151.

being his friendly differences with the French paleobotanists, and he related in a playful manner how he had gone about it to secure the publication of one of his most telling replies to the French School in the *Annales des Sciences Naturelles* in which they themselves chiefly published—a bomb, as it were, in the enemy's camp. In parting he said to me with moisture in his eyes, "We shall never see each other again." And so it has proved.

If I were to specify which one of the many important discoveries that Professor Williamson has made in the field of paleobotany ought to be regarded as the most valuable, I should not hesitate to name his demonstration of the existence of exogenous structure in the Carboniferous Pteridophytes, or, more broadly stated, the irrefragable proof which he has brought forward that exogenous structure is not confined to the Spermatophytes. That it is so confined was simply a dogma of botany, and when Brongniart, in his classical memoir on *Sigillaria elegans*, published in 1839, so clearly proved that the genus *Sigillaria* sometimes has such a structure, influenced by this dogma alone, he inclined to place it in the Gymnosperms, and so great was his authority that until very recent times, and to some extent still to-day, his followers in France have labored to sustain that view. Long after Professor Williamson had overthrown it definitively, the French School continued to defend it, and it was for this reason that he was induced to contribute the paper above referred to in the *Annales des Sciences Naturelles*.¹ He was determined that they should not have the excuse that his researches were in a language with which they were not familiar, and therefore associated with himself Dr. Marcus M. Hartog, of Victoria University, Manchester, and with the aid of a literary friend of Dr. Hartog in Paris, who put the paper into the very best of French, he set forth in the clearest manner the leading arguments in opposition to the old doctrine and thrust it directly before the eminent defenders of that doctrine. The effect was instantaneous. The article was read and repeatedly answered but without weakening the argument, and to-day, with perhaps a single exception, Professor Williamson's conclusions are accepted by the French paleobotanists.

¹ Les Sigillaires et les Lepidodendrées, Par. MM. W. C. Williamson et Marcus M. Hartog. *Ann. Sci. Nat., Bot.*, 6e Sér., Vol. XIII, Paris, 1882, pp. 337-352.

August 10, 1895—Ætat. 54.

387. The Place of Sociology among the Sciences. Contributions to Social Philosophy, I

History.—Written January 16–27, 1895. As this was my first Hartford lecture of 1895, it furnishes the most fitting occasion for introducing an account of that course, and this would be incomplete without describing also the course given there in 1894.

On my return from Europe at the end of September, 1894, I found in my mail a letter from Dr. C. D. Hartranft, President of the Society for Education Extension of Hartford, Conn., inviting me to deliver a course of six or more lectures before the School of Sociology of that Society, setting forth my particular views on sociology. It was dated August 1, and with it was another dated August 15, and a typewritten copy of the first, which was supposed to have miscarried, also a provisional printed syllabus of the subjects to be taught. I found such accumulations of various kinds of work awaiting my return that I felt that I could not assume this additional burden, and I wrote a letter practically declining to undertake it. Dr. Hartranft's reply, dated October 3, begged me to reconsider my decision, and offered to make it as easy as possible for me. I had planned a geological excursion on Long Island with Dr. Arthur Hollick some time in October, and it occurred to me that I might visit Hartford for three days at that time and give the six lectures, two lectures each day. I therefore wrote him that I would give them October 16, 17, and 18. On the evening of October 7, I commenced preparing notes for these lectures. This was the beginning of my lecture-note system, which has grown from that day to this. Dr. Hartranft asked me to change

the dates to the 23d, 24th, and 25th of October, as the dates I had named conflicted with arrangements already made, and I found I could do so. On October 10, I telegraphed to him to that effect, and the same evening I wrote to him giving the titles of the six lectures. These were as follows: 1, *Relation of Sociology to Biology*; 2, *Relation of Sociology to Psychology*; 3, *The Social Forces*; 4, *Genetic Progress*; 5, *Telic Progress*; 6, *Applied Sociology*. My method in part of preparing the notes was to go through the very full indexes of my *Dynamic Sociology* and *Psychic Factors of Civilization* (the only two of my books that had then appeared), and take off such heads as I thought I should want. This work was completed on October 17. On the 19th I left for New York and did the field work before giving the lectures instead of after, as I had originally intended. The lectures were given from these notes on the days appointed and in the order named. The class was to be examined in December, and I was asked to prepare ten questions, which I did. As I could not conduct the examination in person, I appended the proper answer to each question. As indicating my position at that date on some of the most vital problems in sociology, I will here give these questions and answers:

1. What is the healthiest attitude for man to assume as to his relations to the universe?

Ans. That of Meliorism as opposed to both Optimism and Pessimism, and which recognizes the imperfection of those relations along with his power to improve them.

2. What is the natural position of Sociology with reference to Biology and Psychology?

Ans. Sociology rests directly upon Psychology as Psychology does upon Biology.

3. To what department of anatomy and physiology is the analogy between society and a living organism most applicable?

Ans. The nervous system and psychic attributes.

4. To what conclusion does a comparison of organized society with the nervous system and psychic attributes of an organism lead?

Ans. That existing society represents a very low and undeveloped organism in process of evolution.

5. What is the fundamental subdivision of psychic phenomena?

Ans. Into affective, or relating to feeling, and intellectual (noetic), or relating to thought.

6. In what department of man's psychic nature do the Social Forces reside?

Ans. In his affective attributes, or feelings, *i.e.*, in his desires, which constitute the dynamic agent.

7. What is the function of the Intellect in sociology?

Ans. That of a directive agent, and guide to the desires, or dynamic agent.

8. Define and differentiate statical and dynamic sociology.

Ans. Statical sociology relates to function, nature's end, and deals with order. Dynamic sociology relates to feeling, man's end, and deals with progress. The former is the indirect effect of human activities, the latter the direct effect of them.

9. Draw and explain the distinction between genetic and telic progress.

Ans. Genetic progress is that which takes place as the natural result of human action without any intention on man's part to produce it. Telic progress is that which results from the intentional adoption on the part of rational man of means calculated to produce it.

10. What is the most effective means that society can adopt to secure its own advancement?

Ans. Education, defined as "the extension of the maximum amount of the most important knowledge to all the members of society," or the "education of information," as distinguished from the education of discipline, of culture, of research, and of experience.

On January 6, 1895, I wrote to Dr. Hartranft, expressing my dissatisfaction with the course as I had been compelled to prepare and give it, and offering to repeat it the next season in better shape, and to expand it to twelve lectures. He replied on the 8th that it would be a gratification to him to have twelve lectures from me next year. On January 13, I resumed work on my notes for these lectures. My idea was to write out the whole twelve before the date at which they must be given. Six more titles must be introduced, and I was busy trying to decide what they should be. I soon concluded to devote the first one to the question of the position that sociology should occupy in a system of classification of the sciences. I proposed to call the course *Outlines of Social Philosophy*, and I named the first lecture *The Place of Sociology among the Sciences*, and commenced writing it on January 16. On January 22, I drew up the following title and Introduction:

Outlines of Social Philosophy.—A Course of Twelve Lectures before the School of Sociology of Hartford, Connecticut, in October, 1895.

Introduction

Professor George G. Wilson of Brown University, who delivered one of the first lectures before the Hartford School of Sociology on *The Place of Social Philosophy*, defined Social Philosophy in a very clear and satisfactory manner, and distinguished it from Sociology as dealing with the relations of Sociology to other sciences and to the known world in general. In pointing out these

relations, however, it is obviously necessary to set forth in its general outlines the true nature of sociology. I shall therefore use the term Social Philosophy in a somewhat more extended sense and include a general account of the science and of its relations to other sciences. Without going into any of the details of the subject I shall aim to cover all that is properly included in Professor Wilson's definition of Social Philosophy, and also the strictly philosophic aspects of the science itself. The first requisite is to find the true place that Sociology occupies among the sciences. Having done this to the best of my ability I shall proceed in their order to indicate the relation of Sociology to Cosmology, Biology, Anthropology, and Psychology respectively. This done, the character of the data of sociology will claim attention, after which the basic principles of the science will be severally set forth and its proper subdivision and classification attempted. This part will demand a treatment first of all of the Social Forces, then the distinction between Statical and Dynamic Sociology will be drawn. The phenomena of Social Order and Social Progress will be dealt with and the latter separated into its two principal classes, Genetic Progress and Telic Progress. The last stage of any science is its applied stage, and the course will close with an attempt to show what Applied Sociology may become under the guidance of a full-grown social consciousness, will, and intellect.

I make no important claims to originality in this presentation, except that the main conceptions are those that I formulated in my *Dynamic Sociology*. Much more ground, however, is here covered than was covered by that work, for besides the elaboration of the idea of Social Philosophy, I here treat the whole field, statical as well as dynamic, and also indicate the inductive sources from which the philosophy and the science alike proceed. I shall not hesitate to draw freely from that work and from my other writings as well as from any and all sources that may best subserve the end in view.

On March 29, Dr. Hartranft sent me the formal announcement of the fall courses in Sociology, and on April 7, I sent him the titles of all of mine. These were as follows:

1. The Place of Sociology among the Sciences.
2. Relation of Sociology to Cosmology.
3. Relation of Sociology to Biology.
4. Relation of Sociology to Anthropology.
5. Relation of Sociology to Psychology.
6. The Data of Sociology.
7. The Social Forces.
8. The Subjective Trend of Modern Philosophy.
9. Static and Dynamic Sociology.
10. Genetic Progress.
11. Telic Progress.
12. Applied Sociology.

These were duly acknowledged and accepted by Dr. Hartranft in a letter dated April 16.

On May 7, 1895, I read a paper with the same title as this before the Anthropological Society of Washington, but I wove in considerable of my fourth lecture which I was then writing, to give it more of an anthropological character. On May 29, I received a letter from Dr. Albion W. Small informing me that the University of Chicago was about to start the *American Journal of Sociology*, of which he was to be the editor, asking me to be one of the "Advising Editors," and inviting me to contribute. I wrote him on June 2, and told him about my Hartford lectures, the first two of which were already written and the third begun, and offered to contribute some of them. He replied immediately that he would like to have the whole series, and asked me if I would not let him have the first lecture at once for the first number. Although I had a rough draft only, written on waste paper, still, I had revised it carefully, and it did not seem necessary to rewrite it. I gave it another revision and sent it to him on June 9. Proof arrived on July 12, and the first number of the *Journal* appeared on August 10.

On September 23, Dr. Hartranft sent me a statement of the dates of the lectures, viz., November 1-7, again asking for the titles, which I had already sent him. This letter was forwarded to me in California. I was back in Washington on October 27, and had to go very soon to Hartford to give the lectures, which came off according to schedule. This first one was read November 1. I do not think Dr. Hartranft or anyone in Hartford knew that it had been published. I read it from the manuscript, which had been returned to me with the proof.

The remainder of the history of the Hartford lectures will be told under their respective titles. It will, however, be noticed that Lectures 8 and 9 were not the same as the corresponding articles in the *American Journal of Sociology* and chapters of the *Outlines of Sociology*. Lecture 8, *The Subjective Trend of Modern Philosophy*, has never been published with that title, although the matter of it has all gone into other papers, and the parts that had not before appeared in English were embodied in my *Applied Sociology* (pp. 30 ff.). Lecture 9 was my article in the *Political Science Quarterly* on *Static and Dynamic Sociology*, which appeared in June of the same year (see *supra*, Vol. v, No. 381). Lecture 10 corresponds in the main with the 10th and 11th articles and

chapters, while Lectures 11 and 12 were an expansion of the 12th article and chapter.

I received an appreciative letter from Mr. Richard Congreve, dated November 21, 1895, but like all unconditional positivists, he was not satisfied with anything short of a partizan view of Comte and his work. I referred to this letter in mine to Herbert Spencer (see below).

But the principal interest aroused by this first article in the series grows out of the letter of Mr. Herbert Spencer, criticizing it. The circumstances attending that episode are sufficiently explained in the footnote to page 65 of *Pure Sociology*, where his letter appears in full, together with my answer to it and appropriate comments. Nothing further need therefore be said on the subject in this place.

As this paper forms Chapter I of the *Outlines of Sociology*, it need not be included in this work, and is, in fact, excluded under the rule.

The American Journal of Sociology, Chicago, Vol. I, No. 1, July, 1895, pp. 16-27; Outlines of Sociology, New York, 1898, Chapter I, pp. 3-20.

August 13, 1895—Ætat. 54.

388. Fossil Plants

History.—Written July 3–19, 1892. On April 20, 1892, Mr. G. K. Gilbert, who was doing the geological part for the new edition of Johnson's *Universal Cyclopedia*, requested me to assist him by preparing the article on fossil plants. Dr. J. S. Newberry had written the article *Fossil Botany* for the original edition, and it was thought that it would be sufficient simply to revise that and bring it down to date. On April 26, I went to Mr. Gilbert's house and read Dr. Newberry's article. I found it so antiquated that no ordinary revision would suffice. I told Mr. Gilbert that if I could have time enough I would like to furnish a substitute for it. But I had planned an extensive geological reconnoissance and could do nothing about it till I returned late in June. On May 6, I received a letter from the Johnson Company enclosing Dr. Newberry's article and requesting me to revise it. They offered me in payment a set of the revised edition of the *Cyclopedia*, which they said would cost \$56. As I did not care for their "store pay," and was soon to start on my trip, I returned the article, virtually declining to do the work. It seems that they consulted with Mr. Gilbert, and acting on his advice, they wrote me on May 12, again enclosing the article, saying that I could have till July 15, and offering me \$75, which they said was a special rate. I then agreed to take it up as soon as I returned from the field.

I was back before the end of June and by July 3, I was at liberty to begin the work. I tried my best to save parts of Dr. Newberry's article, but it was next to impossible. I finished the rough draft on July 10. I still possess this and find that I pasted many paragraphs on sheets and proceeded to correct them, and that in most cases scarcely anything remained. In the final

draft I reduced the manuscript to the form of an original article, which it really was. Towards the end I did preserve one of his paragraphs of a very general character and somewhat high-sounding language, without indicating that it was his, and the editor, Mr. Robert Lilley, wishing to reduce it down a little, struck out this paragraph! Alas! poor Newberry! I had struggled hard to save a remnant and had failed. I had already cut my original final draft down to 1,500 words, but it seemed desirable to reduce it still more.

The short bibliography at the end of the article was written on July 19, 1892, on which date the whole was sent on. It should have appeared as *Fossil Plants*, i.e., under F, but Mr. Lilley explained to me that for some reason *Fossil Vertebrates* and *Fossil Invertebrates* could not be got in under that letter, and were shoved ahead to V and I, respectively, so he concluded to treat *Fossil Plants* in the same way and put them under *Plants, Fossil*, and so they stand, but on the covers of my reprints, which I did not receive till August 13, 1895, the title is *Fossil Plants*. It makes a somewhat awkward situation, but I conclude to use this title here, as I did in the manuscript.

Johnson's Universal Cyclopedia. Revised Edition, New York, Vol. VI, 1895, pp. 639-645.

August 22, 1895—Ætat. 54.

389. Review of *La Recherche de l'Unité*, Deuxième édition. By E. de Roberty. "Bibliothèque de Philosophie contemporaine." Paris: Félix Alcan, éditeur. 1894; and *Auguste Comte et Herbert Spencer: Contribution à l'histoire des idées philosophiques au XIX. siècle*. Deuxième édition. By E. de Roberty. "Bibliothèque de Philosophie contemporaine." Paris: Félix Alcan, éditeur. 1895

History.—Written May 31 to June 6, 1895. On April 14, 1895, having been attracted by a mention in the *Open Court* of Roberty's book on *Auguste Comte and Herbert Spencer*, I wrote to Dr. Carus about it, probably offering to review it if he would send it to me. He replied that it had been sent to the bindery, but that he had written to Roberty about my letter. On May 16, I received a letter from Dr. Carus enclosing one from Roberty in which the latter said that he had sent me the book and also his *Recherche de l'Unité*. The same day both books arrived, duly inscribed to me. This was the beginning of my relations with Roberty, and from that time till the Russo-Japanese war, when he was obliged to return (from Paris) to Russia to save his estates, he sent me all his books as fast as they appeared. I also sent him mine. Of course my calling him a Frenchman was a blunder.

I read the little books immediately and prepared this review of them both under one.

The Open Court, a Weekly Journal devoted to the Religion of Science, Chicago, Vol. IX.—34, No. 417, August 22, 1895, pp. 4612-4614.

September, 1895—Ætat. 54.

390. Sociology and Cosmology. Contributions to Social Philosophy, II

History.—Written January 29 to February 8, 1895. The original title was: *Relation of Sociology to Cosmology*, and that remains the title of Chapter II of the *Outlines of Sociology*. I had proposed to Dr. Small to call the whole series *Contributions to Social Philosophy*, but for some reason this general title was omitted in the first paper. Here it was placed first, but this practice was not followed, and for the sake of uniformity I have placed it in brackets in the first paper and let it follow the special title here, as it does in all the subsequent ones. I did not rewrite it and it was printed from my revised rough draft written on waste paper. It was subjected to a second thorough revision July 14-16, and mailed to Dr. Small on the 17. Proof arrived on August 2, and the September number appeared towards the end of that month. My reprints reached me on October 28, only four days before I delivered the lecture at Hartford (November 1). As this article forms Chap. II of the *Outlines of Sociology* its history only need be given here.

The American Journal of Sociology, Chicago, Vol. I, No. 2, September, 1895, pp. 132-145; Outlines of Sociology, Chapter II, pp. 21-42.

October 31, 1895—Ætat. 54.

391. Plutocracy and Paternalism

History.—Written May 22–28, 1894, and supplementary matter added Oct. 5–7, 1894, and July 14, 1895. In giving an account of my article on *Weismann's Concessions* (see supra, Vol. V, No. 366) I stated that I sent it to the new editor of the *Forum*, Mr. Walter H. Page, but that he returned it as too technical for that journal. In the letter transmitting it to him, which was dated January 30, 1894, I mentioned having contributed extensively to the *Forum* under the editorship of his predecessor, Mr. L. S. Metcalf, and asked him whether articles from me would still be acceptable. He replied on February 5, intimating that he would be glad to receive them. *Weismann's Concessions* was returned in March, and I did not feel disposed to suggest sending him anything else, but on April 21, of his own accord, he wrote me a long letter about introducing into the *Forum* some articles on *Recent Science*, such as had been appearing in the *Nineteenth Century*, though more popular, and he asked me to contribute such an article. I wrote him the next day proposing an article on *Ancient Forests*, which brought another long one from him, doubting whether that subject would appeal to a sufficiently large number of readers, and suggesting that I name other topics. I replied too vaguely, and on May 2, he asked me for "a list of the topics that you now have in mind, of the sort that would fit the *Forum*." I answered his letter on the 9th, and enumerated six titles, one of which must have been *Plutocracy*. Another was *The Ruralization of City Populations*. In his letters of May 14, and 21, he discussed the latter and thought it had been overdone, but said: "Let us take up first your article on *Plutocracy*. I do not know what you have it in mind to say, but almost any serious consideration of this phenomenon in a republic is very interest-

ing." I consented to write it and he said he would like it by June 5. I went at it at once and considered it done on May 28.

Mr. Page was taken sick in June, and his letter to me, dated June 13, was written on the eve of his departure for Canada, whither his physicians had ordered him, but he said he was taking my manuscript with him. I sailed for Europe on July 28, and did not return till September 29. I then found the manuscript of my article returned with an appreciative letter from Mr. Page, dated August 24, but hoping that I might render some of my general statements more concrete. I had had plenty of examples in my mind, but the parties to them were for the most part living, and I did not wish to make them personal. I wrote him somewhat to that effect and received a reply, dated October 3, in which he repeated his desire for greater concreteness, but without specifying what the statements were that seemed to him too general. I proceeded, however, to introduce illustrations calculated to back up my general indictment, and sent it back on October 7.

I heard nothing more from it, and when I was in New York holiday week I called at the editorial rooms of the *Forum* on December 29, and had quite a talk with Page about that and other matters. He had put the article on the docket for early publication.

The matter remained in abeyance for another six months, and on July 2, 1895, Mr. Page resigned the editorship of the *Forum*. He sent me a note saying that he had turned my manuscript over to his successor with a special memorandum about it. In fact, I received a note dated July 11, from Mr. Isaac L. Rice, the new editor, saying it was his intention to use my article in the September or October number, but returning it to me again in order to enable me to make any changes in it that seemed necessary to bring it up to date. The "Pooling Bill" was then before Congress, and it seemed to be an excellent case in point. On July 14, I introduced the matter relating to that, making six illustrations altogether. It did not appear till the November number, which was out on October 31, and I bought it at a news stall on 42d Street, when I was again in New York. But I had ordered reprints.

Public Opinion reprinted a large part of this article, and it was quite widely noticed by the press. I received a good many letters, of which the following may be taken as a representative:

THE ST. BOTOLPH CLUB, 2 NEWBURY ST.,
BOSTON, NOV. 10, 1895.

MY DEAR DR. WARD:

Just a word to express my real delight that you have put that wretched perversion of "paternalism" in a light so admirably clear and persuasive.

Yours sincerely,

JOHN GRAHAM BROOKS.

Mr. J. A. Allen, of Kingston, Canada, father of Grant Allen, whose personal acquaintance I had made several years before when he was on a visit to Washington, wrote me a very complimentary letter. I was the more surprised, as I knew that, like his son, he was strongly individualistic in his views. He was then eighty-two years old. His letter, dated December 2, 1895, is long, and I will quote a few sentences only. He begins by saying:

"I always considered you a man of great parts, but in your last little brochure you were so kind as to send me, you have surpassed yourself. You have, indeed, given the death wound to unjust monopoly, or rather, torn to shreds the whole theory."

Farther on he speaks of the article as

"so powerful and discriminative, and so lucid, and expressed in such well-balanced sentences, and so scholarly. . . . I admired it much, not only for the substance of the thought but for the fine style in which your thoughts were clothed,"etc.

My apprehensions, however, that some persons then living might consider their toes trodden on were justified. It happened that the General Electric Company, which I mentioned, later got on its feet, and has since been in a flourishing condition. I had a little stock in the Thompson-Houston Electric Company, and I simply mentioned the state of things at the time of writing. Seven years later, viz., on August 14, 1901, the Secretary of the General Electric Company, Mr. M. F. Westover, in a business letter relative to the exchange of preferred for common stock, took occasion to say:

"I have no doubt you are well informed as to the history of the Company up to this time, as I remember very distinctly your comments, two or three years ago, upon the iniquity of the action of our Directors while doing their (to them) plain duty."

In my reply I said that "in speaking of corporations one never means to implicate the individuals composing them." In his later letter (August 22), he quotes this sentence, but rather charges me with having implicated the individuals in my article. I admit that the wording on page 307 of the article might be open to this interpretation, and if I had written it all at the same time I should have worded it differently. But, as will be seen from the above account of the manner in which this article was written, the examples were supplied at the request of the editor several months after the article had been sent in. This produced a disjointed effect which I overlooked. The first 18 lines of that page, ending with the word "wreck," belong to the original draft, and embody a general charge. The example of the Thompson-Houston Electric Company was tacked on at the later date without my perceiving that it might be construed as implicating its "directors" specifically. Such was certainly not the intention. It all shows, however, the value of a magazine article to show these concerns that the public is watching them.

The Forum, New York, Vol. XX, No. 3, November, 1895, pp. 300-310; Public Opinion, New York, Vol. XIX, No. 20, November 14, 1895, p. 621.

TO judge from the tone of the popular press, the country would seem to be between the devil of state interference and the deep sea of gold. The two epithets, "plutocracy" and "paternalism," so freely applied, are intended to characterize the worst tendencies of the times in these two opposite directions, and are calculated to engender the bitterest feelings in the public mind. If such a thing were possible, it would certainly be useful, standing aloof from the contest, to make a cool, unbiassed analysis of the true meaning of these terms in their relation to the existing state of affairs. While it may be admitted that this is impossible, such an approximation to it as the conditions will allow can certainly do no harm.

On all subjects that interest mankind there are extremes of thought, and these form a sort of penumbra outside the general consensus of opinion among right-minded people. While most persons consider the possession of wealth a rightful condition and a laudable aim of life, there are some who accept Proudhon's dictum, "*la propriété c'est le vol*," and nearly all shades of opinion between these may be found. The average man desires to see the business interests of society left free and open to equal competition, but there are those who would have the state conduct all

industry and make all citizens salaried employees. Between these views there are also many intermediate ones. This condition has always existed very much as it is to-day. On the whole there seems to be little danger that any of the extremes of popular opinion will ever prevail, but at the same time there is always a moderate, often rhythmic, drift in some one direction, so that what were extremes are so no longer, and other unthought-of schemes occupy the van. It is this that constitutes social progress.

Justly or unjustly, society has made wealth a measure of worth. It is easy on general principles to prove that it is not such a measure. Every one is personally cognizant of numerous cases to the contrary. All will admit that, taken in the abstract, the principle is unsound, and yet all act upon it. Not rationally, not perhaps consciously, but still they do it. It is "human nature" to respect those who have, and to care little for those who have not. There is a sort of feeling that if one is destitute there must be a reason for it. It is inevitably ascribed to some personal deficit. In a word, absence of means is, in one form or another, made to stand for absence of merit. Its cause is looked for in character. This is most clearly seen in the marked contrast between the indisposition to help the unsuccessful, and the willingness to help the successful. Aside from the prospect of a *quid pro quo*, no one wants to waste time, energy, or money on what is worthless,—and possession is the primary test of worth.

It would be easy to work out the genesis of this sentiment, and to show how it is the natural result of the universal competition in society, where the fittest to survive is always the one who can gain possession of the greatest amount of this world's goods. It has therefore a rational basis, a substratum of truth on which to rest. We are chiefly concerned with it here as a fact. It is universal. Those who most thoroughly condemn it are influenced by it. The force that works against it in society is not the absence or weakness of the sentiment itself, but another and wholly dissimilar feeling, viz., sympathy. This sentiment is not rational, but illogical, as shown by the fact that men give alms to satisfy temporary want rather than opportunity to supply permanent needs. But of the other sentiment, which may be called "plutolatry,"—the worship of wealth—even the victims show traces, and in denouncing the rich they unconsciously attribute to them a personal dignity proportional to their wealth.

Thus it comes about that wealth, in the existing state of society, is a tremendous power. It gives not only ease, plenty, luxury, but, what is infinitely more, the respect of all and the envy of the less favored. It gives, in a word, superiority; and the strongest craving of man's nature is, in one way or another, to be set over his fellows. When all this is considered, the futility of the proposal of certain reformers to eradicate the passion for proprietary acquisition becomes apparent. It may be assumed that this

passion will continue for an indefinite period to be the ruling element of the industrial state. That it has done and is still doing incalculable service to society few will deny. That it may continue to be useful to the end of our present industrial era will probably be admitted by all but a small class.

If the accumulation of wealth, even for the benefit of individuals, were all that is involved in the term "plutocracy," the indictment would not be serious. If the governing power implied in the last component of the word were nothing more than the normal influence that wealth exerts, no great injury to society could accrue. Even the amassing of colossal fortunes is not an evil in itself, since the very activity which it requires stimulates industry and benefits a large number. There is, it is true, a danger—in the transmission of such fortunes to inactive and non-productive heirs—of creating a non-industrial class in perpetuity; but this could be remedied, without hardship to any worthy person, by a wise limitation of inheritance.

So much for plutocracy. Let us now turn to the other pole of public opinion and inquire into the meaning of "paternalism." Literally, of course, paternalism in government would be restricted to cases in which the governing power is vested in a single person, who may be regarded as well-disposed and seeking to rule his subjects for their own good, as a father governs his children. But a ruling family, or even a large ruling class, may be supposed to govern from similar motives. In either case the governed are not supposed to have any voice in the matter, but are cared for like children by the assumed wisdom of their rulers. How far from true paternalism is anything that exists in this or any other civilized country to-day may therefore be readily seen. No one will claim that there is any danger, in a representative government with universal suffrage, of any such state being brought about. This shows at the outset that the term is not used in its original and correct sense, but is merely borrowed and applied as a stigma to certain tendencies in republican governments which the users of it do not approve. What are these tendencies? In general it may be said that they are tendencies toward the assumption by the state of functions that are now entrusted to private enterprise.

On the one hand it is logically argued that the indefinite extension of such powers would eventuate in the most extreme socialistic system,—the conduct of all business by the state. On the other hand it is shown with equal logic that the entire relinquishment of the functions which the state has already assumed would be the abolition of government itself. The extremists of one party would land us in socialism; those of the other, in anarchy. But on one side it is said by the more moderate that the true function of government is the protection of society; to which it is replied by the other that such extension of govern-

mental powers is in the interest of protection, viz., protection against the undue rapacity of private enterprise. Here, as almost everywhere else in the realm of politics, it is a question of quantity and not of quality. It is not a difference in principle, but in policy. It is the degree to which the fundamental principle of all government is to be carried out.

If we look for precedents and historical examples we find great diversity. If we take the question of government telegraphy we find that the United States is almost the only country in the civilized world that has not adopted it, while the reports from other countries are practically unanimous in its favor. That such a movement should be called paternalism is therefore quite gratuitous, and must spring from either pecuniary interest or unenlightened prejudice. From this on, up to the question of abolishing the private ownership of land, there is a multitude of problems presenting all shades of difference in the degree to which the principle of state action is to be applied in their solution. They need to be fearlessly investigated, coolly considered, and wisely decided in the true interests of the public. It was not the purpose of this article to discuss any of these questions, but simply to mention them in illustration of the popular use of the term "paternalism." It is clear that that term is employed solely to excite prejudice against the extension of the functions of the state, just as the term "plutocracy" is used to arouse antagonism to the wealthy classes. The words have in these senses no natural meaning, and, with intelligent persons, should have no argumentative weight.

Are there, then, no dangerous or deleterious tendencies in modern society? There certainly are such, and they may be said to be in the direction of both plutocracy and paternalism, giving to these terms not a literal, but a real or scientific meaning, as denoting respectively the too great power of wealth, and the too great solicitude for and fostering of certain interests on the part of government.

The first law of economics is that every one may be depended upon at all times to seek his greatest gain. It is both natural and right that the individual should be ever seeking to acquire for himself and his; and this rather irrespective of the rest of the world. It was so in the olden time, when physical strength was almost the only force. It is so to-day, when business shrewdness is practically supreme. Government was instituted to protect the weak from the strong in this universal struggle to possess; or, what is the same thing, to protect society at large. Originally it was occupied solely with abuses caused by brute force. It is still, so far as this primary function of enforcing justice is concerned, practically limited to this class of abuses, relatively trifling as they are. Crime still means this, as it did in the days of King Arthur, and as it does to-day in barbaric countries. Any ad-

vantage gained by force is promptly met by the law; but advantage gained by cunning, by superior knowledge,—if it be only of the technicalities of the law,—is not a crime, though its spirit be as bad as that of highway robbery and its consequences a thousand times worse.

From this point of view, then, modern society is suffering from the very opposite of paternalism,—from under-government, from the failure of government to keep pace with the change which civilization has wrought in substituting intellectual for physical qualities as the workers of injustice. Government to-day is powerless to perform its primary and original function of protecting society. There was a time when brigandage stalked abroad throughout Europe and no one was safe in life or property. This was due to lack of adequate government. Man's nature has not changed, but brigandage has succumbed to the strong arm of the law. Human rapacity now works in subtler ways. Plutocracy is the modern brigandage and can be dislodged only by the same power,—the power of the state. All the evils of society are the result of the free flow of natural propensities. The purpose of government is, as far as may be, to prevent this from causing injustice. The physical passions of men are natural and healthy, but they cannot be allowed to go unbridled. Government was established, not to lessen or even to alter them. Exactly the same is needed to be done with the higher acquisitive faculty. It need not be condemned; it cannot be suppressed: but it can and should be directed into harmless ways and restricted to useful purposes. Properly viewed, too, this is to secure its maximum exercise and greatest freedom, for unrestrained license soon leads to conflict, chokes its own free operation, and puts an end to its activity. The true function of government is not to fetter but to liberate the forces of society, not to diminish but to increase their effectiveness. Unbridled competition destroys itself. The only competition that endures is that which goes on under judicious regulation.

If, then, the danger of plutocracy is so largely due to insufficient government, where is the tendency to paternalism in the sense of too much government? This opens up the last and most important aspect of the subject. If there were no influences at work in society but those of unaided nature; if we had a pure physiocracy or government of nature, such as prevails among wild animals, and the weak were thereby sacrificed that the strong might survive to beget the strong, and thus elevate the race along the lines of evolution,—however great the hardship, we might resign ourselves to it as part of the great cosmic scheme. But unfortunately this is not the case. Without stopping to show that, from the standpoint of a civilized society, the qualities which best fit men to gain advantage over their fellows are the ones least useful to society at large, it will be sufficient for the present pur-

pose to point out that in the actual state of society it is not even those who, from this biological point of view, are the fittest, that become in fact the recipients of the greatest favors at the hands of society. This is due to the creation, by society itself, of artificial conditions that destroy the balance of forces and completely nullify all the beneficial effects that are secured by the operation of the natural law on the lower plane. Indeed, the effect is reversed, and instead of developing strength, either physical or mental, through activity incident to emulation, it tends to parasitic degeneracy through the pampered idleness of the favored classes.

What, in the last analysis, are these social conditions? They are at bottom integral parts of government. They are embodied in law. Largely they consist of statute law. Where this is wanting they rest on judicial decisions, often immemorial, and belonging to the *lex non scripta*. In a word, they constitute the great system of jurisprudence relating to property and business, gradually built up through the ages to make men secure in their possessions and safe in their business transactions, but which in our day, owing to entirely changed industrial conditions, has become the means of throwing unlimited opportunities in the way of some and of barring out the rest from all opportunities. This system of artificial props, bolsterings, and scaffoldings has grown so perfect as to make exertion needless for the protected class and hopeless for the neglected mass. In a word, it has become the bulwark of monopoly. Says Prof. John R. Commons in his "Distribution of Wealth":

"The heads of industries are no longer the independent Napoleons of finance; they find their sphere as high-salaried managers and legal advisers, while the successors of the *entrepreneurs* proper, the original organizers and promoters of enterprises, are simply the commonplace, idle recipients of the permanent profits and the mildly fluctuating temporary profits. . . . Instead of the profits being due to the powerful exertions and abilities of the captains of industry, they are due to certain fixed social relations and rights. The recipients of these incomes may with perfect security become idlers and drones. They abdicate their functions as *entrepreneurs* into the hands of salaried chiefs and advisers. They are no longer performing the services of society which were performed by their ancestors or predecessors, who organized and developed the business to which they have succeeded."

And thus we have the remarkable fact, so persistently overlooked in all the discussions of current questions, that government, which fails to protect the weak, is devoting all its energies to protecting the strong. It legalizes and promotes trusts and combinations; subsidizes corporations, and then absolves them from their obligations; sustains stock-watering schemes and all forms of speculation; grants without compensation the most valuable franchises, often in perpetuity; and in innumerable ways creates, defends, and protects a vast array of purely parasitic enterprises,

calculated directly to foster the worst forms of municipal corruption. The proofs of each one of these counts lie about us on every hand. Only those who are blinded by interest or prejudice can fail to see them.

There is no greater danger to civilization than the threatened absorption by a few individuals of all the natural resources of the earth, so that they can literally extort tribute from the rest of mankind. If half a dozen persons could get possession of all the breadstuffs of a country, it would justify a revolution. Fortunately, from the nature of this product, this is impossible, although long strides in that direction have from time to time been taken. But it is otherwise with some other products which, if less indispensable, are still among the modern necessities of life. All the petroleum of this country is owned by a single trust. If men could not live without it there is no telling how high the price would be raised. Nothing limits it but the question of how much the public will pay rather than do without. That indispensable product, coal, has well-nigh reached the same stage through the several railroad combinations that now control it. That which costs sixty cents to mine, and as much more to transport, cannot be obtained by the consumer for less than five or six dollars. Does it speak well for the common sense of a great people that they should continue to submit to such things? There seems to be no remedy except in the power of the nation.

It is time, too, that the people began to look into the great question of transportation. If a thorough investigation should show that the hour is not yet come for the public management of the vast enterprises involved, it would at least show, as it has done in England, France, Germany, and nearly all the other countries of Europe, that they are in need of thorough and systematic regulation. Does any one, for example, suppose that there is any permanent advantage in the railroad rate-wars that are so frequently waged in this country? The low cut-rates are always of short duration, and the result is the ultimate combination of the interests involved, usually followed by higher rates than before. And why should several companies be allowed to build parallel lines between the same points, like the three between Philadelphia and Atlantic City, when one is abundantly sufficient to supply the traffic? Is it not clear that the public must pay this unnecessary expense? Would it be any infringement of human liberty for the state to forbid the construction of a railroad for the sole purpose of being sold to another that had no use for it except to get it out of its way? In France nothing of the kind is allowed, and the railroad system of that country is under strict and rational state regulation; yet no one complains of oppression.

One of the greatest needs of an industrious people is a safe and profitable investment of their surplus earnings. In the existing

condition of things they are driven into the stock-market. In a few rare cases the stocks taken prove good. In still rarer cases—such as the first telephone shares—they become enormously productive. But in the great majority of cases they first fluctuate and finally fall below par, often to a mere nominal value. There seems to be nothing to prevent the directors of these concerns from manipulating the shares so as first to enrich themselves and then to leave the business a wreck. Witness the degeneracy of the great Thompson-Houston Electric Company, its absorption of other properties, its passage into the General Electric Company, the suspension of dividends, and the fall of the stock to thirty-five cents on a dollar. It may be said that those who choose to risk these losses should suffer for their folly. But there is nothing that is safe. Savings banks are even more precarious, for here failure results in total loss to the depositor. And there seems to be nothing to prevent the legal authorization of all kinds of investment schemes to tempt the public to entrust them with its money, until the organizers think they have all they want and can afford to “fail” and retire with it. If the state cannot really require a safe guaranty to investors, or prohibit such insecure organizations, it can at least offer, in the form of national savings banks, an opportunity for prudent people to make a safe disposition of their surplus funds; and this has been done in nearly every country except the United States.

One of the most crying evils of the times is the reckless manner in which the most important franchises are being given away. The following statement made by Mr. W. C. Dodge, President of the Associated Charities of the District of Columbia, in his annual address of December, 1891, has not, to my knowledge, been answered or denied. It is to be taken merely as a sample of what is going on throughout the country:

“Here are seven street railroad companies, two gas companies, two telegraph companies, two telephone companies, and one electric-light company, not one of which gave a cent for their valuable franchises, and the whole amount of taxes paid by these fourteen corporations the past year is but \$98,321.45,—a mere trifle as compared with the value of their franchises and the profits drawn by them from the public. Some have never paid in the full amount of their capital stock, and yet pay dividends and extend their works from their profits, while the stock of others is quoted on the market as from 100 to 400 per cent. premium.”

It is well known that in almost every country of Europe these franchises, based on “natural monopolies,” are made to constitute one of the principal sources of revenue.

The “burning question” of our day is the reform of municipal government. The evils complained of all result from the same cause as the national evils already enumerated, which is at bottom the indifference of the citizen to what is being done by self-seeking individuals. Here, as everywhere, personal greed is

laying the public under tribute. Individualism is supreme. Party politics are shrewdly brought into obscure public interests, and behind this veil abuses go unperceived. The cities, as well as the nation at large, need to wake from the lethargy of *laissez faire*, and to take matters into their own hands. They would do well to begin with a study of the recent policy of the London County Council, and, if they doubted its efficacy, they would only need to pay a visit to the "Greater London." Some idea of what there is to be learned in this direction is given in a paper read by Mr. Sydney Webb, in August last, before the British Association for the Advancement of Science.

The very possession of wealth is only made possible by government. The safe conduct of all business depends upon the certain protection of law. The most powerful business combinations take place under legal forms. Even dishonest and swindling schemes, so long as they violate no penal statute, are protected by law. Speculation in the necessities of life is legitimate business, and is upheld by the officers of the law though it result in famine; and even then bread riots are put down by the armed force of the state. Thus has society become the victim of its own system, against the natural effects of which it is powerless to protect itself. It has devised the best possible scheme for satisfying the rapacity of human nature.

And now, mark: The charge of paternalism is chiefly made by the class that enjoys the largest share of government protection. Those who denounce state interference are the ones who most frequently and successfully invoke it. The cry of *laissez faire* mainly goes up from the ones who, if really "let alone," would instantly lose their wealth-absorbing power.

A significant example of this is found in some of the provisions of the so-called Pooling Bill. In a paper read by the Hon. Carroll D. Wright before the American Economic Association in December last, he characterizes this as "state-socialistic," and says:

"This pending legislation is demanded at the instance of the shippers and the railroads of the country, and its passage is being aided by a powerful lobby in their service. The railroads base their advocacy of the bill on the claim that it will be for the interest of the shippers to have such a law."

And he predicts that it will be followed by a demand that the government shall take charge of the roads and guarantee dividends to the stockholders. He further says:

"All this will be at the demand and in the interest of the railroads and of the shippers, and not of the labor involved in carrying on the work of transportation, as the demand of to-day for the enactment of the pooling bill is alleged to be largely in the interest of the shippers and the public welfare."

Nothing is more obvious to-day than the signal inability of capital and private enterprise to take care of themselves unaided

by the state; and while they are incessantly denouncing "paternalism,"—by which they mean the claim of the defenceless laborer and artisan to a share in this lavish state protection,—they are all the while besieging legislatures for relief from their own incompetency, and "pleading the baby act" through a trained body of lawyers and lobbyists. The dispensing of national pap to this class should rather be called "maternalism," to which a square, open, and dignified paternalism would be infinitely preferable.

Still all these things must be regarded as perfectly natural, that is, inherent in the nature of man, and not as peculiar to any class. Therefore personalities and vituperation are entirely out of place. It is simply a question of whether they are going to be permitted to go on. The fault is altogether with the system. Nor should any one object to state protection of business interests. Even monopoly may be defended against aggressive competition on the ground of economy. The protection of the strong may not be too great, but there should be at the same time protection of the weak against the protected strong. It is not the purpose of this article to point out remedies, but tendencies, and it seems clear that right here are to be located the two greatest dangers to modern society. Here lies the only plutocracy, and here the only paternalism. The two are really one, and are embodied in the joint fact of state-protected monopoly.

The degree to which the citizen is protected in the secure enjoyment of his possessions is a fair measure of the state of civilization, but this protection must apply as rigidly to the poor man's possessions as to those of the rich man. In the present system the latter is not only encouraged, but actually tempted to exploit the former. Every trust, every monopoly, every carelessly granted franchise, has or may have this effect, and the time has arrived when a part at least of this paternal solicitude on the part of government should be diverted from the monopolistic element and bestowed upon the general public. If we must have paternalism, there should be no partiality shown in the family.

November, 1895—Ætat. 54.

392. Sociology and Biology. Contributions to Social Philosophy, III

History.—Written February 9, to March 14, 1895. The original title was *Relation of Sociology to Biology*, which is also that of Chapter III of the *Outlines of Sociology*. The long quotations from Huxley and Spencer were omitted in the original draft, as I intended to read them from books to the class. But when I was called upon to prepare the paper for publication (August 3-4), I copied them and inserted them in their proper places. The lecture was delivered at Hartford, November 2, and the November number of the *Journal* appeared November 18. As this article forms Chapter III of the *Outlines of Sociology*, I give its history only here.

The *American Journal of Sociology*, Chicago, Vol. I, No. 3, November, 1895, pp. 313-326; *Outlines of Sociology*, Chapter III, pp. 43-63.

December 3, 1895—Ætat. 54.

393. Administrative Report for the year ending June 30, 1893

History.—Written June 20-26, 1893. Though the proof was read in October, and the volume is dated 1893, it did not appear till 1895, and I did not receive a copy till December 3, 1895.

Fourteenth Annual Report of the United States Geological Survey, 1892-93, Part I, Report of the Director, Washington, 1893 [1895], pp. 258-265.

December 1, 1895—Ætat. 54.

394. Romanes on Darwinism

History.—Written November 14-17, 1895. The review mentioned of the first volume was not written by me, although the editors of *Public Opinion* sent me both volumes. I had had some correspondence with Romanes on the principal subject of this volume, viz., non-advantageous characters.

Public Opinion, New York, Vol. XIX, No. 23, December 5, 1895, p. 750.

December 31, 1895—Ætat. 54.

395. Voluntary Organization

History.—Read December 31, 1895. I had it written out and handed a copy to Professor J. W. Jenks the day before, who said he was furnishing papers to the press. This appeared on the same day it was read. See a fuller account of the whole affair under a later date (*infra*, No. 417). This item was copied verbatim in the *Indianapolis Journal* the following day.

The Indianapolis News, Indianapolis, Vol. XXVII, No. 21 (whole No. 8123), December 31, 1895, p. 2; *The Indianapolis Journal*, Indianapolis, January 1, 1896, p. 8.

December 31, 1895—Ætat. 54.

396. Negative and Positive Wants

History.—Remarks on the paper of Dr. Simon N. Patten on the *Formulation of Normal Laws with especial reference to the Theory of Utility*. These were entirely extemporaneous remarks, as I had no intention of discussing the paper, not being able from the title to form a judgment as to its nature and scope. A stenographer was present and I have his report as it was sent me typewritten by Professor Jenks on February 1, 1896. I overran my time and stopped speaking when a motion was made to have it extended, and I was urged to continue, which I did for a few minutes longer.

As the newspaper report does not give nearly half of what I said, although it is all that was printed and must constitute the present paper, still, the subject is so vital that I conclude to introduce the full stenographer's report as part of the history. There will of course be repetition, but allowance must be made for that.

President Patten's paper is something more than a contribution to economics; it is a contribution to social philosophy. I merely wish to put down in a few very disconnected propositions some of the collateral aspects that seem to me partly to follow from it, partly to grow out of it and partly to form his thesis itself. The first is that of the exceedingly material character of the satisfaction. We may go up into the higher realms of thought as much as we please, we are obliged to come down to the fundamental basis, that the majority of human satisfactions are directly or indirectly material. Even if we go beyond the satisfaction of necessary wants, those necessary to life, and deal with the satisfactions of our spiritual wants, as they are called, a term which you will better understand and a term which I would prefer, we still find that the bulk of those satisfactions are based upon material things—our esthetic, moral, and intellectual wants.

Now there are two classes of wants which may be called respectively,

negative and positive wants. A negative want, I should define as a desire to escape a disagreeable sensation or condition, while a positive want would be a want which when satisfied, places the individual in a higher condition than before. What Professor Patten calls in his recent work a pain economy, is a state of society in which the bulk of the wants are negative wants, and I do not think there is any doubt that the condition which he has described of a transition from a pain to a pleasure economy is a fact in human history. And this means nothing less than that up to a certain point, which he does not attempt to define and which I will not attempt to define—and which is not necessarily a point of time, but is a condition of human society—the race has been in a state of negative want, a state in which the negative want prevails. It has been in a negative state, so to say—and we must face the fact that the pains have exceeded the pleasures, and the great effort of mankind has been to escape from pain rather than to secure pleasure. We have then, a negative and a positive state of society, which have taken place in that order, and there has been a transition in the history of the world from a negative to a positive stage. In a pain economy we may characterize the whole system as minus, while in a pleasure economy we may characterize life with a plus sign. A pain economy is a minus, or a negative, a pleasure economy is a plus, or a positive state of society. We thus have a negative and a positive ethics before us. Professor Cunningham, in his work on *Political Economy*, states that economics has no other *raison d'être* than that of furnishing or tending to contribute something to the betterment of society. That is nothing more than we can assert for every science, for science is essentially ethical in its nature and in its object. Now optimism is the only state of mind that the race could have possibly possessed during this negative state, or in a pain economy, and which would be consistent with the continuance of life. The moment reflection and intelligence begin to bear upon the condition of society in a pain economy, that moment pessimism comes in, because it will not bear analysis. As soon as we look upon the world and find that it is below the zero line, the reason declares that it has no right to exist.

That is the basis of pessimism. But it has so happened, and naturally enough, that we have had optimism which has buoyed the race on through, and the object of it simply has been to sustain life. The world has simply vegetated up to the zero line; beyond the zero line we propose to live.

[On motion the speaker's time was extended.]

I thank you for the honor, I will be as brief as possible. I say then that optimism is nothing more nor less than the survival in the social state of the law of self-preservation in the animal. It is the condition of unconscious struggle against a pain economy, against a negative state of existence which has buoyed it up and carried it up, until the development has been sufficient to raise it above the zero line. Pessimism was the necessary concomitant of a large part of the later stage of this period, simply because there were isolated individuals whose reason would rise to the penetration of the facts of existence and a recognition of that negative condition which gives no warrant or authority for existence. Now the Ricardian economics, as I understand it, is adapted

to a pain economy and not to a pleasure economy, and Mr. Kidd's *Social Evolution* is simply a plea for the continuation of optimism to buoy us on farther until we shall be placed fairly upon a basis at which the reason will warrant existence. That is the final analysis that I shall make of Mr. Kidd's ultra-rational sanction, which he calls religion. It is simply optimism which has always existed and unconsciously kept the race alive through the long, dark period in which we were really in a semi-animal state in our struggle for existence, not for happiness. All we could hope or expect to do was to keep on existing until, perchance, conditions due to intelligence and the growth of our powers of reasoning should eventually result in our scientific and our artistic development and the power to produce the necessities or the means of supplying our higher wants, and should at last raise us to a state above the zero line. Now I am inclined to think that this stage, in which we live to-day, may be regarded as just about the point at which we are crossing the zero line and coming up into a rational existence, a state of existence upon which the light of reason can be shed, and which will justify our continuance. I will not take further time but I have thrown out these few thoughts which I think are quite in line with the discussion in hand.

The Indianapolis News, *ibid.*

PROFESSOR WARD—The paper is a contribution to social philosophy. There are two classes of wants—negative and positive. The negative want is a desire to escape a disagreeable sensation or condition; a positive want is a desire to satisfy a want that places an individual in a higher condition than before. Up to a certain point the race has been in a state of negative want. That is to say, the pains of life have exceeded the pleasures, and the great aim of mankind has been to escape from pain rather than to secure pleasure. There has been a transition in the history of the world from a negative to a positive state. We thus have a negative and a positive ethics before us. Optimism is the only state of mind that the race could have possibly possessed during this negative state in the pain economy. The moment reflection and intelligence begin to bear upon the condition of society in the pain economy, that moment pessimism comes, because it will not bear analysis. Reason declares it has no right to exist. As we have had optimism which has buoyed the race up—optimism is nothing more or less than the survival of the social state; the law of self-preservation in the animal—so the condition of unconscious struggle against a pain existence has buoyed the race up above the zero line. The stage in which we live to-day may be regarded as the level at which we are crossing above the zero line, and we are going up to a height that will justify our existence.

January (?), 1896—Ætat. 54.

397. Report on the Department of Fossil Plants in the U. S. National Museum for the year ending June 30, 1893

History.—Prepared by assistants under my direction and signed by me, but introduced into the Director's report as my work, the language changed accordingly.

Annual Report of the Board of Regents of the Smithsonian Institution for the year ending June 30, 1893. Report of the U. S. National Museum, Washington, 1895, pp. 176-178.

January (?), 1896—Ætat. 54.

398. Bibliography for the year ending June 30, 1893.

History.—Carefully prepared by myself as required by the Director.

Ibid, pp. 310-312.

WARD, LESTER F. [Abstract of] The plant-bearing deposits of the American Trias.

Proc. Am. Assoc. Adv. Sci., XL (Washington meeting), 1891, pp. 287-288.

Abstract of paper of same title published in *Bull. Geol. Soc. Am.*, III, 1891, pp. 23-31.

— [Abstract of] Principles and methods of geologic correlation by means of fossil plants.

Proc. Am. Assoc. Adv. Sci., XL (Washington meeting), 1891, pp. 288-289.

Abstract of paper of same title in *Am. Geologist*, IX, 1892, pp. 34-47.

- [Abstract of] The science and art of Government.

Proc. Am. Assoc. Adv. Sci., XL (Washington meeting), 1891, pp. 420-421.

A paper read in abstract before Section I (Economics and Statistics) of the American Association for the Advancement of Science, at its Washington meeting, in August, 1891. Published in *Science*, XVIII, November 20, 1891, p. 281.

- [Abstract of] A national university; its character and purpose.

Proc. Am. Assoc. Adv. Sci., XL (Washington meeting), 1891, pp. 421-422.

A paper read in abstract before Section I (Economics and Statistics) of the American Association for the Advancement of Science, at its Washington meeting, in August, 1891. Published in *Science*, XVIII, November 20, 1891, p. 281.

- Notice of "The Paleontology of the Cretaceous formation on Staten Island; by Arthur Hollick, New York, 1892," in *Trans. N. Y. Acad. Sci.*, Vol. XI, New York, 1892.

Am. Journ. Sci., 3d series, XLIV, New Haven, September, 1892, p. 259.

- Notice of "Untersuchungen über fossile Hölzer Schwedens; von H. Conwentz"; in *Kongl. svenska Vetenskaps-Akademiens*, Bandet 24, No. 13.

Am. Journ. Sci., 3d series, XLIV, New Haven, September, 1892, p. 260.

- [Review of] Weismann's new essays.

Public Opinion, XIII, Washington and New York, September 10, 1892, p. 559.

Short review of Weismann's essays upon heredity and kindred biological problems. Vol. II. Authorized translation, Oxford, 1892. The second essay is criticized as embodying a *reductio ad absurdum*. The concluding essay on *Amphimixis* is highly commended.

- Notice of "Albirupean studies"; by P. R. Uhler; in *Trans. Md. Acad. Sci.*, 1892, pp. 185-201.

Am. Journ. Sci., 3d series, XLIV, New Haven, October, 1892, pp. 333-334.

- Notice of "The fossil flora of the Bozeman coal field, by F. H. Knowlton"; in *Proc. Biol. Soc., Washington*, VII, Washington, July, 1892, pp. 153-154.

Am. Journ. Sci., 3d series, XLIV, New Haven, October, 1892, p. 834.

- Notice of "Paléontologie Végétale (Ouvrages publiés en 1890) par R. Zeiller," from l'Annuaire Géologique Universel, VII, 1890, Paris, 1892, pp. 1115-1157.

Am. Journ. Sci., 3d series, XLIV, New Haven, October, 1892, pp. 334-335.

- Notice of "Sylloge Fungorum Fossilium hucusque cognitum; auctore A. Meschinelli. Patavii, 1892"; from Saccardo's *Sylloge Fungorum*, X.

Am. Journ. Sci., 3d series, XLIV, New Haven, October, 1892, p. 335.

- Notice of "I Tronchi du Bennettitee dei Musei Italiani. Notizie storiche, geologiche, botaniche; dei Professori Senatore G. Capellini e Conte E. Solms-Laubach"; from serie v, tomo II, della Mem. Real. Acad. Sci. Ist. di Bologna. Bologna, 1892.

Am. Journ. Sci., 3d series, XLIV, New Haven, October, 1892, pp. 335-336.

- Notice of "Ueber den gegenwärtigen Standpunkt unserer Kenntniss von dem Vorkommen fossiler Glacialpflanzen; von A. G. Nathorst"; from the Bihang till svenska Vet.-Akad. Handlingar, Band 17, Afd. III, No. 5, Stockholm, 1892.

Am. Journ. Sci., 3d series, XLIV, New Haven, October, 1892, p. 336.

- The psychologic basis of social economics.

Ann. Am. Acad. Political and Social Science, III, Philadelphia, January 1893, pp. 72-90.

The distinction is pointed out between what is described as animal or biologic and human or psychologic economy. The former is carefully formulated, explained, and illustrated, and it is shown that the current political economy as well as the individualistic philosophy of Herbert Spencer and his disciples is primarily founded upon it. Examples of the prodigality of nature are given to show that it is not economical, and a sharp contrast is shown between nature's methods and those of rational man. The fundamental defect of all systems of economics is thus shown to be that they rest upon biology or the law of unregulated nature, instead of upon psychology or the law of mind. A true system of economics will be based upon the latter, which is antithetical to the former and is economical in the correct sense of the word.

- Nomenclature of the Rock Creek region.

Am. Anthropologist, VI, Washington, January, 1893, p. 45.

A list of the names furnished to the committee of the Anthropological Society appointed to suggest to the District Commissioners appropriate names for localities and objects in the District of Columbia. These names were given to the various streams, bluffs, ridges, and valleys on account of the discovery at or near these places of rare or interesting plants during many years of botanical exploration, which resulted in the publication of the Guide to the Flora of Washington and Vicinity. (*Bull. U. S. Nat. Mus.*, No. 22, 1881.) Some of them were either mentioned in the text of that work or recorded in the map accompanying it, but the greater part were taken from the author's unpublished notes.

- The psychologic basis of social economics.

Proc. Am. Assoc. Adv. Sci., XLI, 1892; Salem, 1892, pp. 301-321.

Address of the Vice-President of Section I, Economic Science and Statistics, delivered at Rochester, August 17, 1892. This paper is the same in substance as that published in the Annals of the Academy of Political and Social Science at Philadelphia, for January, 1893, except that in the latter certain paragraphs were omitted to reduce its length.

- The new botany.

Science, XXI, New York, January 27, 1893, pp. 43-44.

A plea for the establishment of post-graduate chairs in the leading American universities for the study of botany from all points of view, especially from the paleontological side, for the working out of the phylogeny of plants in America.

- Notice of "Additions to the Paleobotany of the Cretaceous Formation on Staten Island, by Arthur Hollick"; in *Trans. N. Y. Acad. Sci.*, XIII, New York, 1892, pp. 1-12, pls. I-IV.
Am. Journ. Sci., 3d series, XLV, New Haven, May, 1893, p. 437.
- Notice of "The organization of the fossil plants of the coal measures, Part XIX, by W. C. Williamson"; in *Phil. Trans. Roy. Soc.*, London, CLXXXIV, B, 1893, pp. 1-38, pls. I-IX.
Am. Journ. Sci., 3d series, XLV, New Haven, May, 1893, pp. 437-438.
- Notice of "Fossil plants as tests of climate," by A. C. Seward. London, 1892.
Am. Journ. Sci., 3d series, XLV, New Haven, May, 1893, p. 438.
- Notice of "Flora Tertiaria Italica; auctoribus A. Meschinelli et X. Squinabol." Patavii, 1893.
Am. Journ. Sci., 3d series, XLV, New Haven, May, 1893, pp. 438-439.
- Notice of "The correlation of early Cretaceous floras in Canada and the United States," by Sir William Dawson; in *Trans. Roy. Soc. Canada*, X, Section IV, pp. 79-93.
Am. Journ. Sci., 3d series, XLV, New Haven, May, 1893, p. 439.
- Notice of "A new Tæniopteroid fern and its allies," by David White, in *Bull. Geol. Soc. Am.*, IV, 1893, pp. 119-132, pl. I.
Am. Journ. Sci., 3d series, XLV, New Haven, May, 1893, pp. 439-440.
- Frost freaks of the Dittany.
Botan. Gaz., XVII, Bloomington, Ind., May, 1893, pp. 183-186, pl. XIX.
Describes remarkable forms of frost crystals observed on plants of *Cunila mariana*, December 5, 1892, near Accotink, Va., with illustrations.
- Dr. Newberry's work in Paleobotany.
Trans. N. Y. Acad. Sci., XII, New York, May, 1893, pp. 162-163.
Abstracted from a letter to Prof. H. L. Fairchild, dated 1893. Embodied in a memoir of Prof. John Strong Newberry, by Herman LeRoy Fairchild.
- Note on fossil Cycads from South Dakota.
Science, XXI, New York, June 30, 1893, p. 355.
Brief account of a collection of six fossil cycadean trunks, purchased by the U. S. National Museum from owners near Hot Springs, S. Dak., who found them on the surface of the ground, overgrown with lichens. They were very large, and exhibit certain peculiar and remarkable features.
- Discussion of a paper by Dr. E. A. Ross, entitled "A New Canon of Taxation," read, August 24, 1892, at Chautauqua, N. Y.
Publications of the American Economic Association, VIII, No. 1, 1893, pp. 50-51.
Part of report of the Proc. Am. Economic Assoc. Fifth meeting.
Emphasizes the importance of considering the social as well as the fiscal effect of a tax, and of giving to laws an attractive character, whereby the person taxed will be induced through interest to act for the good of society.

January, 1896—Ætat. 54.

399. Sociology and Anthropology. Contributions to Social Philosophy, IV

History.—Most of the history of this article was given before (see *supra*, No. 387), but as the last four paragraphs (pp. 431–433) do not occur in the earlier paper, it is necessary to regard this as a different one. The additional paragraphs were written November 8, 1895, at which date the modified article was sent to Dr. Small. Proof was received December 14, and the January number appeared on January 6, 1896. This new matter was retained in the *Outlines of Sociology*, so that all of both papers is to be found there (Chapter IV). For this reason neither will be repeated here.

The American Journal of Sociology, Chicago, Vol. I, No. 4, January, 1896, pp. 426–433; *Outlines of Sociology*, Chapter IV, pp. 64–93.

January, 23, 1896.—Ætat. 54.

400. The Metaphysics of Romanes. Review of “Mind and Motion and Monism.” By the late George John Romanes. Cloth, 170 pages, \$1.25. New York and London: Longmans, Green & Co., 1895

History.—Written November 29, 1895. The book was sent me for review, and I read it with somewhat more care than I had read Romanes's other works, devoting to it ten days (November

19-29) of such time as I could spare, but when read I dashed off the review at one sitting.

Public Opinion, New York, Vol. XX, No. 4, January 23, 1896, pp. 119-120.

THIS book consists mainly of four essays published in the British magazines from 1882 to 1886, the first part, entitled "Mind and Motion," being the author's "Rede Lecture" delivered at Cambridge in 1885 almost intact. The other essays were more or less modified and cemented together by the author and edited by Prof. C. Lloyd Morgan. In the "Rede Lecture" Dr. Romanes makes the assertion that "it has become the scientifically orthodox teaching" that nerve-action is the cause of brain-action, but without quoting any author to that effect, and then proceeds to demolish this doctrine, which he characterizes as "materialism." Most of his shafts are directed against Prof. Clifford's previous lecture on "Mind and Body," although, as Romanes admits, Clifford did not accept materialism.

The second part of the book, which is collectively called "Monism," has an introduction and six chapters. In the first chapter he refutes philosophic spiritualism, which holds that mind processes are the cause of nerve processes. In the second he again refutes materialism, which is the reverse of spiritualism. In the third he declares for monism, which identifies nerve and mind processes and denies any causal relation between them. In the fourth chapter, on "The World as an Eject," which is a somewhat ingenious but highly metaphysical speculation upon the relations between mind and the external world, he argues for the existence of mind qualities in inorganic nature. His reasoning is about as follows: All beings within our sphere of observation that exhibit mind qualities possess an organized nervous system; but we can *imagine* mind qualities as belonging to beings without a nervous system; *therefore*, the universe is intelligent.

In the fifth and sixth chapters he considers the will in relation to spiritualism, materialism, and monism, respectively, and goes over all the well beaten ground of libertarianism and determinism. Spiritualism would make the will an agent but only a miraculous agent. Materialism would deny all free agency to the will. Monism, however, "reestablishes" the agency of the will but identifies it with causality. Prof. Morgan in his preface to the book speaks of this as "a doctrine the relation of which to the teachings of Schopenhauer will be evident to students of philosophy." So far from this being the case, Romanes is not speaking of Schopenhauer's "will" at all, and seems to have no conception of it. It is the old will of the schoolmen that he describes a metaphysical entity which the science of psychology has never

been able to find. Moreover, Schopenhauer never identifies will with causality, but *matter*. "*Die Materie ist durch und durch Causalität.*"

Dr. Romanes was an excellent observer of facts in the domain of biology and possessed considerable ability in reaching important conclusions within that restricted field, but this book clearly shows that the moment he cut loose from his concrete moorings and embarked upon the sea of general philosophy he was intellectually lost.

In editing these papers there are some oversights. For example, more than half a page (pages 30-31) of the "Rede Lecture" is literally repeated in another place (pages 85-86).

February 21, 1896.—Ætat. 54.

401. The Filiation of the Sciences

History.—Written February 3-5, 1896. This of course is only an abstract of my paper with that title read before the Philosophical Society of Washington on February 1, but I wrote it out carefully myself in the third person as the report of the Secretary, and I possess the manuscript in my handwriting from which it was printed. The "paper" itself was presented orally and occupied practically the whole evening. I was full of my subject, having only recently answered Herbert Spencer's letter attacking me for saying that he arranged the volumes of his *Synthetic Philosophy* in the order of Comte's "hierarchy of the sciences." I was equipped with both his letter and a copy of my answer, which I read to the Society.* I also brought Spencer's *Classification of the Sciences*, and I placed his scheme on the board and discussed that. The paper was listened to with marked attention, but the time for its discussion was limited. On February 7, Dr. Cattell wrote to me saying:

"I trust you will let *Science* print your paper on 'The Filiation of the Sciences' presented before the Philosophical Society of Washington. I need scarcely say that this paper would be of great value to *Science*, if you decide to print it there."

The same day he wrote again saying:

* These are published in *Pure Sociology*, pp. 66-69, where also will be found a discussion of the whole subject.

"Since writing to you this morning I have received from Mr. Winlock an abstract of your paper on 'The Filiation of the Sciences.' We are glad to have this, but should be even more pleased if you were able to contribute the whole address."

I did not reduce the whole paper to writing, partly because it must have included my correspondence with Herbert Spencer, and if published would have required me to ask his permission to publish his letter, which would have made him trouble, and he might have declined to give it. When I wrote my *Pure Sociology*, however, in 1901-1902, matters were different. Mr. Spencer had ceased his activity and it was evident that his end was near. It seemed probable that the book would not appear during his life (he survived it only a few months), and his letter contained matters vital to his system that had never been published.

I sent a copy of *Science* containing this abstract to Mr. Frederic Harrison, then and still the leading positivist in England, and his letter regarding it is well worth producing here. He says *inter alia*:

"Your paper at the Phil. Soc. of Washington in Feb. seems to me as sound as it is interesting. You have entirely proved what I have pointed out to Mr. Spencer, that his own *practice* in all essentials follows Comte's series of the sciences, and that the difference in order and classification is rather a matter of nomenclature and detail. Your own preference for making Ethics a subordinate section of sociology accords, as you are aware, with Comte's own original scale as stated in his *Philosophie*, and indeed is always understood by Spencer to be Comte's final scheme, since Spencer (with curious ignorance or carelessness) still continues to criticize Comte's *six* sciences, instead of *seven*."

I should have mentioned this letter in *Pure Sociology* (page 65) where I stated that others besides myself had expressed views similar to mine.

In the *Revue Occidentale*, the organ of the French Positivists, for March 1, 1896, there is an elaborate review of my short abstract in *Science*, by M. V. Pépin, who devotes eleven pages to it. It is appreciative of my position, but somewhat critical on certain points. It fails to recognize that this is a bare abstract of a large subject, and makes many unwarranted assumptions as to what I really did say in my paper. But it is of course an unqualified defense of everything that Comte taught, with little allowance for the progress of science since his day.

Science, New Series, New York, Vol. III, No. 60, February 21, 1896, pp.

MR. LESTER F. WARD read a paper on "The Filiation of the Sciences." The purpose of the paper was to trace the progress of the conception of a natural order of development for the larger groups of phenomena, as distinguished, on the one hand, from any attempt at a logical classification of the sciences, and on the other, from the consideration of the order in which the sciences have been historically developed. Without going back of the present century to deal with the more or less fanciful notions of the Ancients or of such moderns as Oken, Hegel, d'Alembert, Hobbes, Locke, etc., he drew attention to the views of Auguste Comte and Herbert Spencer, as the two philosophers who had clearly conceived the problem of natural evolution.

He first traced the development of the idea in the mind of the first of these writers from 1820 to 1842. In a paper published by him in 1820, he had quite clearly expressed the fundamental truth, and arranged the great groups of phenomena, or sciences, in the following order: 1, Mathematics; 2, Astronomy; 3, Physics; 4, Chemistry; 5, Physiology; giving to each of these terms a wide meaning, but admitting that mathematics was not coördinate with the others, but was only the criterion by which each of the others was to be judged and its position in the series fixed. From 1826 to 1829 he elaborated this scheme in a course of lectures, soon after published as his well-known work on Positive Philosophy, the first volume of which appeared in 1830. In the prospectus of these lectures, circulated in manuscript form in 1826, he added to the above five sciences a sixth, viz: Social Physics, and the scheme as then drawn up was introduced in tabular form at the beginning of the first volume of the Positive Philosophy. In Vol. III of that work, which appeared in 1838, he substituted for his Physiology Lamarck's term Biology, but the scope of this science was the same as before and practically that of biology as now understood. The last chapter of that volume was devoted to what he called the intellectual and moral, or cerebral, functions of life, in which he fully recognized the present science of psychology, but denied that it could be properly separated from biology. In the fourth volume, published in 1839, he speaks of this as "Transcendental Biology." It is in this volume, too, that he first proposed the term "Sociology," as the exact equivalent of his "social physics," and continued to the end to use both these terms interchangeably. It was not till 1842, with the appearance of the first volume of his Positive Polity (*Politique Positive*) that he added anything to the scheme of sciences thus drawn up. He then recognized, as the seventh and last term of the series, the science of Ethics. The entire series, then, as he finally left it, was as follows: 1, Mathematics; 2, Astronomy; 3, Physics; 4, Chemistry; 5, Biology (including cerebral or transcendental biology); 6, Sociology; 7, Ethics.

Comte was at great pains to explain that this series represented the true order of nature, and that the phenomena corresponded to the actual evolution that has taken place in the universe. The degree of "positivity" of any science is that to which it can be reduced to mathematical laws. The first of the sciences that represent phenomena, viz, astronomy (from which sidereal astronomy was excluded) is therefore the most positive, and the degree of positivity diminishes with each term in the series. The sciences thus arranged also diminish in their generality while they increase in their complexity.

Moreover, each higher science has its roots in the one next below it and is, as it were, derived from it. The relationship is genetic, and hence his favorite term "filiation," a word much better chosen than the term "hierarchy" which he also applied to the system.

Mr. Ward next proceeded to consider the scheme of Mr. Herbert Spencer as elaborated in his *Synthetic Philosophy*. A prospectus of that work was circulated in 1860. It was to embrace one volume on First Principles, two volumes on the Principles of Biology, two volumes on the Principles of Psychology, three volumes on the Principles of Sociology, and two volumes on the Principles of Morality. In this prospectus, between the First Principles and the Principles of Biology, was inserted the following explanatory note: "In logical order should here come the application of these First Principles to Inorganic Nature. But this great division it is proposed to pass over, partly because even without it the scheme is too extensive, and even because the interpretation of Organic Nature after the proposed method is of more immediate importance." This scheme of course was regarded by all as representing Mr. Spencer's conception of the natural order of evolution in the universe, and the arrangement of his topics was supposed to reflect his views of the actual succession of cosmic events. The groups of phenomena, *i. e.*, the several great sciences, would, therefore, stand as follows:

- 1, Inorganic Nature (subdivisions not indicated); 2, Biology;
- 3, Psychology; 4, Sociology; 5, Morality.

How closely he has adhered to this scheme is known to all, the only deviation being the merely verbal one of substituting the word "Ethics" for "Morality" in the title of the last work.

How he would have subdivided the phenomena of inorganic nature, and how he would have designated and arranged the subdivisions, has remained for the most part a matter of inference. In illustrating the cosmical laws laid down in his *First Principles* he frequently swept across the whole field and generally began with the nebular hypothesis and astronomical phenomena, then dealt with planetary and terrestrial events, involving the action of heat, light, electricity, etc., and passed to organic phenomena through the chemical process by which the higher compounds

have been developed. From this it was inferred by some that his arrangement of the inorganic sciences, had he worked it out, would have been the same as Comte's, viz: Astronomy, Physics, Chemistry.

In 1864 he published his Classification of the Sciences, but even here this question was not answered to the clear comprehension of all, for a classification may be quite a different thing from a genesis or filiation of the groups of phenomena classified. Still, inasmuch as he classed physics and chemistry as "abstract-concrete" sciences, dealing with the "elements" of phenomena, while astronomy, geology, biology, psychology, and sociology were classed as "concrete" sciences, dealing with the "totalities" of phenomena, it was safe to assume that it was to the latter group alone that he proposed to confine his Synthetic Philosophy; and in the larger table of the concrete sciences, after making astronomy coördinate with the combined phenomena of astrogeny and geogeny, he arranged under the last of these groups, biology and the other organic sciences in a scale of progressive subordination.

In an article dated December 3, 1868, and published as an appendix to the first volume of his Principles of Biology (not, of course, to the first edition, which appeared in 1867), he says: "I am placed at a disadvantage in having had to omit that part of the System of Philosophy which deals with Inorganic Evolution . . . which should . . . precede the *Principles of Biology*. Two volumes are missing. The closing chapter of the second, were it written, would deal with the evolution of organic matter—the step preceding the evolution of organic forms"; and he then proceeds to discuss this aspect of the subject in connection with the doctrine of spontaneous generation, respecting which he had been misunderstood by his critics. He deals with it mainly from the chemical standpoint, as, indeed, he also does in the opening chapters of that volume.

Once more, at the very beginning of his Principles of Sociology, the first part of which appeared in 1874, he remarks: "Of the three broadly distinguished kinds of Evolution, we come now to the third. The first kind, Inorganic Evolution, which, had it been dealt with, would have occupied two volumes, one dealing with Astrogeny and the other with Geogeny, was passed over, etc." This would seem to leave no further doubt upon the point in question.

Mr. Ward added that he had recently received a letter from Mr. Spencer in which the series was given complete according to his present view of the subject, and in which he admitted that he had aimed to confine the treatment in the Synthetic Philosophy exclusively to the concrete sciences as defined in his Classification of the Sciences. This latest version of the matter is given in the right-hand column of the following table, the final arrangement of

Comte being shown in the left-hand column for purposes of comparison:

System of Auguste Comte.		System of Herbert Spencer.
1. Astronomy.	}	1. Astronomy.
2. Physics.		2. Geology.
3. Chemistry.		
4. Biology (including)		3. Biology.
5. Cerebral Biology.		4. Psychology.
6. Sociology.		5. Sociology.
7. Ethics.		6. Ethics.

Mr. Ward said that he would himself agree with Spencer in admitting psychology to equal rank with the other members of the series, but that he would differ from both Comte and Spencer in assigning such rank to ethics, which he regarded a subdivision of sociology.

When it is remembered that the question involved is solely that of the natural order of evolution, or genesis of the successive groups of phenomena, and not that of the logical relationships of the sciences that have to deal with them, still less that of the historical order in which these sciences have been cultivated, it seems clear that it makes little difference whether, with Comte, the attention is concentrated more upon the laws governing the phenomena, or, with Spencer, upon the objects manifesting the phenomena. The series is virtually the same in either case, and it may be fairly claimed that it embodies the largest truth which the universe presents.

March, 1896—Ætat. 54.

402. Sociology and Psychology. Contributions to Social Philosophy, V

History.—Written May 17–26, 1895, as *Rélation of Sociology to Psychology*, which was the title of my Hartford lecture and is that of Chapter V of the *Outlines of Sociology*. It was delivered November 4, and on the 8th, it was sent with the changed title to Dr. Small for publication. Proof was received on January 6, 1896, and the number containing it came out on March 6. As it forms a chapter of the *Outlines* the above historical sketch will suffice in this place.

The American Journal of Sociology, Chicago, Vol. I, No. 5, March, 1896, pp. 618–632; **Outlines of Sociology**, Chapter V, pp. 94–115

March, 1896—Ætat. 54.

403. Review of the Theory of Social Forces; by Simon N. Patten, Ph.D. Supplement to the Annals of the American Academy of Political and Social Science, Vol. VII, No. 1, January, 1896, Philadelphia, p. 151

History.—Written January 20–24, 1896. This paper was mentioned under a previous head (see *supra*, No. 396), as containing the germ of some remarks made by me at the American Economic Association. I need say nothing of the first part, containing Dr. Patten's curious psychology, further than that the

“prominent experimental psychologist” who answered my questions was Dr. J. McK. Cattell. I have since fully realized the “hope” expressed relative to the second part of expanding the fertile thought that it contains (see *infra*, Nos. 451; 454).

Several serious typographical errors occurred in printing this article, the worst being the misspelling of Dr. Patten’s name (Patton). These must have been made after I returned the proof, for I retained the copy and still possess it, and there the name is correctly spelled. Dr. Small detected the error himself, but too late for correction. He wrote to me regretting it. My extras had not yet (March 6, 1896) been struck off, and I sent the errata on March 8. The corrections were made in my reprints, but could not be made in the March number.

The American Journal of Sociology, Chicago, Vol. I, No. 5, March, 1896, pp. 633–639.

April, 1896—Ætat. 54.

404. Administrative Report for the year ending June 30, 1894

History.—Written June 27–28, 1894. In fact it was dictated on June 27, and typewritten on June 28. Proof did not arrive until February, 1895, and the volume, though dated 1895, did not appear until May, 1896. My illustrated memoir on *The Potomac Formation* was published in this same volume (pp. 307–397, plates ii–iv). See the next paper.

Fifteenth Annual Report of the United States Geological Survey, 1893–’94, Washington, 1895 [1896], pp. 188–194.

April, 1896—Ætat. 54.

405. The Potomac Formation

History.—Written February 21, to June 26, 1894. I had been studying the Potomac formation since 1885 and had already written papers on its flora. It was part of my general work on geologic correlation from the standpoint of paleobotany, and having worked up the Trias, the next plant-bearing horizon then known was the Lower Cretaceous. But I had become specially interested in the geology of the Potomac formation, and did not agree with Mr. McGee and Professor Fontaine in regarding it as a geological unit. I had come to regard it as a series of beds rising from the landward toward the coastward margin, the several members dipping coastward and running under the higher marine Cretaceous and Tertiary beds nearer the coast. No one had taken this view, and I decided to write an article on the Geology of the Potomac formation. I had thought of publishing it in the *American Journal of Science*. As in all my official work, I dictated the article direct to my typist. But I prepared diagrammatic sections clearly bringing out my results.

The purely stratigraphical part was finished on March 27, and on March 28, I read a paper on *The Geology of the Potomac Formation* before the Geological Society of Washington. To illustrate this paper I enlarged the three diagrammatic sections on pp. 339-341, making three large charts, using different colors to denote the several different beds. The leading geologists of the Survey were present, but there was no time for discussion, and this was postponed till the next meeting on April 11. I brought my charts again and hung them up. Nearly all who had taken any interest in the formation were present, including Professor P. R. Uhler, who came over from Baltimore on purpose. Mr. McGee, who named the formation, and whom I

expected to offend by disagreement with his views, made a very complimentary speech, saying that my results were a triumph of paleobotany. I would prefer to call them a triumph of rational theory, but the paleobotany fully confirmed them.

On March 30, I wrote to Professor H. S. Williams, who was then at Yale and had most to do with the *American Journal of Science*, offering to publish my paper as a series of articles in that journal. On April 4, I received a reply asking me to condense my paper into an article of 12 pages. I answered that I could not do that, and the matter was dropped. On April 14, I first thought of publishing it in the *Annual Report* of the Survey and I consulted the Director on the subject. He approved of the idea, and from that date I regarded it as an official monograph. I then concluded to expand the paleontological part and make it a final report on the Potomac formation. I had discovered the new and interesting Mount Vernon flora, and I wanted to illustrate it, as it differed from the floras below and above it. I had the most characteristic types drawn, and devoted a chapter and three plates to it.

I worked several weeks on the correlation of the different Potomac floras with each other and with other floras, and prepared extensive tables of distribution. I commenced dictating the part on the paleontological evidence on May 9. On May 23, I read a paper before the Geological Society of Washington on *The Paleontology of the Potomac Formation*. My time was so limited that I could only make a beginning, but I had placed a table of distribution on the blackboard and hung up the columnar section. Professor Uhler and Mr. Bibbins both came over from Baltimore to hear my paper. I continued working out the results until June 19, when the whole paper was dictated. I then gave it a thorough revision, and it was engrossed in duplicate, completed, and the first impression sent to the Director for publication on June 26.

The paper underwent a thorough literary overhauling in the Editorial Division of the Survey during the summer while I was abroad, and after my return I revised the manuscript anew and considered the suggestions of the editorial staff, which were not serious or important.

On December 31, 1894, I received a letter from Professor Dana, asking me for my paper on the Potomac Formation for

publication in the *American Journal of Science*. He said I might have all the space I wanted! There had evidently been some clamor for my results, and they regretted having declined the article when I offered it to them. I replied that I had sent it in for publication by the U. S. Geological Survey.

As late as January 26, 1895, I found that the manuscript had not yet gone to the printer, and I temporarily withdrew it and worked in the matter relating to the "Island Series," as it appears on pp. 372-375. I returned it on January 30, and heard no more of it till proofs began to reach me on April 10. This was a prolonged affair and was not fully over till July. On July 5, I commenced preparing the index from the final page proofs. This was made on slips, and was completed on the 11th. The slips were then sent to the Editorial Division to be incorporated with the rest for the volume. I was not required to do this work, but I knew that it would be very imperfectly done by the editors, and I wanted the index to be thorough.

After the proof was all read and the index made there was always a long delay before the volume appeared. In this case it was nearly a year, and it was May 29, 1896, before my paper saw the light. I had ordered reprints, and these I received the same time as the volume. I had stipulated that the index to the whole volume be stitched in at the end of my reprints, and this was done.

Before the article appeared, viz., on April 11, 1896, at the request of Professor W. B. Clark, I gave to the geological students of Johns Hopkins University a familiar talk about the Potomac Formation and its true nature. Uhler and Bibbins were both there, and Professor Clark expressed himself as greatly pleased. In fact, down to the date of my work no clear idea existed in the minds of geologists on the subject.

This paper is of course excluded from the present work under the rule adopted.

Ibid., pp. 307-387, pl. ii-iv.

May, 1896—Ætat. 54.

406. The Data of Sociology. Contributions to Social Philosophy, VI

History.—The lecture proper was written May 26, to June 13, 1895, and was delivered in Hartford on November 4. The paper was not sent to press till January 29, 1896, and before sending it I added a supplement relating to the special social sciences, which consists of the last three paragraphs. This paper forms Chapter VI of the *Outlines of Sociology*, concluding Part I. Only its history is therefore needed here.

The American Journal of Sociology, Chicago, Vol. I, No. 6, May, 1896, pp. 738-752; *Outlines of Sociology*, Chapter VI, pp. 116-136.

May 14, 1896—Ætat. 54.

407. Professor Giddings's Principles of Sociology. "The Principles of Sociology." An Analysis of the Phenomena of Association and of Social Organization. By Franklin Henry Giddings, M.A., Professor of Sociology in Columbia University in the City of New York. Cloth, 476 pages, \$3. New York: Macmillan & Co.

History.—Written April 28-29, 1896. I had been sometime at work on an elaborate article in review of this work, and merely

stopped to throw off this short sketch for *Public Opinion*. See *infra*, Nos. 412; 416.

Public Opinion, New York, Vol. XX, No. 20, May 14, 1896, p. 630.

THE great waves of social discussion that characterize our times and rivet public attention are only the surface manifestation of a deep current of thought that has set in strongly in the direction of a thorough investigation of fundamental social problems. The real fruits of this movement are not the numerous strikes and lockouts and boycotts that fill the newspapers, nor yet the hasty legislation, now in the interest of labor and now in that of capital, that is loading the statute books, but it is the more and more frequent appearance of solid works on social subjects, the results of prolonged reflection and study on the part of trained minds capable of judicially balancing the complicated evidence and of penetrating to the heart of social questions. Such a work is the one now in hand, and although it is not likely to satisfy the demands of impatient reformers, it is destined to do far more for true social reform than any of the numerous well-meaning but over-zealous elaborations of specific programs for social action.

What is most needed is more knowledge as to the true nature and origin of society. Unless it is known how society has been developed and of what elements it is composed, it is impossible to adopt measures that will help on its natural evolution. The object of this book is to furnish just this kind of knowledge. It is, moreover, written by a professional teacher who knows how to adapt it for use as a textbook in the higher institutions of learning, where the information it contains will find its way into the minds of those young persons who are preparing themselves to go forth into the practical world where their influence will be strong in stemming dangerous popular currents and in inspiring the healthy development of sound and accurate ideas on all advanced questions. In short, the work is a scientific one, and science, while it strikes deep, is always temperate and conservative.

The "sociological idea" is first discussed and then an attempt is made to define the scope of sociology, after which the methods and then the problems of sociology are set forth. This prepares the way for the main subject of the work, viz., the elements, structure, and historical development of society. The whole subject of human association is passed in review. A long chapter is devoted to population in its various aspects, a shorter one (too short) to "the social mind," and then, what the author calls the "social composition" (families, hordes, clans, tribes, nations, etc.) is clearly distinguished from the "social constitution" (voluntary organizations of every kind). The facts of social

evolution are treated under the novel and suggestive heads of zoögenic, anthropogenic, ethnogenic, and demogenic association, to each of which aspects in this order a chapter is devoted. Too much praise cannot be given to this department of the work nor to the thorough and painstaking manner in which it is elaborated. It furnishes the solid groundwork of a great science. The greater part of it is properly anthropology, but that is the science nearest to sociology, since it is man of whose associative activities the latter science treats. A full knowledge of man is therefore essential.

The concluding portion of the work deals with the processes of association, its causes, and the laws under which it takes place. In discussing these aspects the author is less happy than in his treatment of the phenomena themselves. While he believes in sociology as a science, that is, as constituting a domain of uniform natural laws and of phenomena resulting from efficient causes that will one day be understood, he is said to hold that the time has not yet come for a thorough treatment of this science, and to admit that the present work is in large measure preliminary and preparatory to the ultimate establishment of such a science. As such a preparation, however, there can be no doubt that it constitutes the most successful attempt that has thus far been made.

It need scarcely be added that the publishers have done their part in a manner characteristic of that well-known house, but it is to be regretted that they should deem it necessary to adhere to the antiquated English orthography in the case of books written by Americans. It would be a wholesome lesson to their readers in Britain to accustom them to this extent to the rational simplified American spelling, approved as it is by the leading philological societies of both England and the United States.

May 28, 1896—Ætat. 54.

408. Review of "The Primary Factors of Organic Evolution." By E. P. Cope, Ph.D. Cloth, 563 pages, \$2. Chicago: The Open Court Publishing Co.

History.—Written May 13, 1896. I received the book on May 1, and gave it a hasty reading. There was so little in it that was new to me that it did not repay careful study. It is a work of popularization and adapted to the general public.

Ibid., No. 22, May 28, 1896, p. 694.

THIS will be a very useful book to the large and growing class of readers who, without being specialists in any branch of science, desire to acquaint themselves with the main facts and principles of science in general. It is a clear, straightforward statement of the most important evidence upon which the doctrine of evolution in the organic world rests. It is not an expository textbook of an elementary character, but is in the main a connected argument by a master in his field for the value of this evidence and the truth of evolution. While it comprehends the whole field, it is necessarily in the main a presentation of the facts of paleontology, and especially of vertebrate paleontology, to which the writer has chiefly devoted his life. But really this is at once the most important and the least developed point of view from which the question has been approached.

We have first a chapter on variation, which is the basis of all organic transmutations, and then we plunge directly into the main problem of phylogeny, or race generation. The several lines of development of the vertebrata—fishes, batrachians, reptiles, birds, mammals—are successively taken up and illustrated, and then we are specially treated to the two most important phylogenies, those of the horse and of man. The chapter which follows this, and which he calls "Parallelism," should have been called ontogeny.

Though much too short it deals with the remarkable law associated with the name of Von Baer, who discovered it without perceiving its immense significance, that in a certain way the embryos of the higher animals pass through the same stages that the forms themselves have passed through in their development, so that ontogeny becomes a recapitulation of phylogeny. It is natural that such a wonderful truth should have led enthusiasts too far, and latterly there has been a slight reaction against the doctrine. But no one has ever pretended that every step in phylogeny can always be distinguished in embryology, and Professor Cope lays special stress on the law which he calls "cænogeny," by which many of the earlier phases are often completely obliterated. This happens also with the intermediate stages which are found wanting, although the embryo continues to repeat certain of the primordial stages. Nothing could be more in harmony with what we ought to expect in nature, and these facts are in no way opposed to the general law of embryological parallelism.

The second part of the book deals with the causes of variation, the principal of which come under the head of "Kinetogenesis," or the changes brought about through the activities of living creatures. It is in the prolonged discussion and profuse illustration of this principle that our author furnishes the strongest proof of his thoroughgoing Lamarckism. His views on the subject were well known, but nowhere has he marshaled the evidence more convincingly than in this chapter. It forms a fitting prelude to the third and concluding part of the book which treats of the inheritance of variation and includes a full discussion of the modern heredity question and the transmissibility of acquired characters. Of course Prof. Cope considers that the facts of paleontology settle this question beyond the necessity of further dispute. Every character resulting from kinetogenesis is necessarily an acquired character, and it is the sum of the inherited accumulations of such characters that constitutes organic development. He does not ignore or belittle the effects of natural selection, but, like Darwin himself, he does not regard it as alone capable of explaining all the facts. There are two important chapters on the Energy of Evolution and The Functions of Consciousness, and the work closes with an enumeration of the leading opinions and principal contributions of Neo-Lamarckians.

June 12, 1896—Ætat. 54.

409. Fossil Plants of the Wealden

History.—Written March 10–17, 1896. It was dictated March 10–13, the rough draft revised, and a clean copy made. Dr. Cattell promptly accepted the article, but, as it was long, he asked for a little time in publishing it.

*Science, New Series, New York, Vol. III, No. 76, June 12, 1896,
pp. 869–876.*

June 18, 1896—Ætat. 55.

410. Review of Lecky's Democracy and Liberty. "Democracy and Liberty." by William Edward Hartpole Lecky, New York: Longmans, Green and Co. 1896, 2 vols.

History.—Written June 4–5, 1896. My reading of these volumes was very cursory indeed, but the subjects discussed are so little scientific, so on the surface of things, and really so commonplace, that it would have been a sheer waste of my time to read the work carefully. It has always been a marvel to me how a great man can spend his life on such questions when there are so many deep and truly scientific problems awaiting solution. I gave my copy of the work to Mr. Victor Louis Mason on June 5.

Public Opinion, New York, Vol. XX, No. 25, June 18, 1896, p. 791.

June 24, 1896—Ætat. 55.

411. Ethical Aspects of Social Science

History.—Written December 8, 1895, to January 19, 1896. In the winter of 1895-96 a course of public lectures on Economics was arranged by Professor A. F. Craven, Professor of Economics in Columbian (now George Washington) University at Washington, and on November 13, 1895, Professor Craven asked me if I would be willing to give one of them. I consented and gave as my subject the title of this paper. On November 25, I received a note saying that Dr. B. L. Whitman, President of the University, would introduce me. The lecture was the eighth one of the course and was delivered on November 26. I had prepared some slip notes which I used and spoke without reading a manuscript. The lecture was well received, and I was honored by having the Hon. Carroll D. Wright among the auditors.

I had been intending to write an article on the subject, and my decision was now fully confirmed. I wrote to Dr. S. Burns Weston, Editor of the *International Journal of Ethics*, on November 28, asking whether an article with such a title would be acceptable, and he replied on December 5, that it probably would be. I was soon at work on it and by December 22, the outline was struck off. I had to go to Indianapolis holiday week to attend the meeting of the American Economic Association, and the part I took in that meeting precluded any further work on this article till January 7, 1896, when I commenced revising it. This was completed on January 12, and then Professor Craven borrowed it and kept it till the 15th. I still have that rough draft. I commenced rewriting it on January 16, and finished it on January 19, which was Sunday, and I devoted the entire day to it. I sent it to Dr. Weston on the 20th. The next day I sent in as the title of a paper for the Anthropological Society of Washington:

Sociology in its Relations to Ethics, which was read on February 18, and consisted of this paper with a few collateral commentaries. Dr. Weston was in Washington on March 25, and called on me. We discussed the article, and he seemed very favorably impressed with it, but said it certainly was heterodox ethics. He said, however, that it would be published in the *International Journal of Ethics*. Proof was received on April 6, and a copy of the July number containing it reached me on June 24. Four days later I received my ordered reprints.

This article was translated into Russian by a person named T. Kril, and published in a journal entitled: *Mir bozhii* (*God's World*). I received a separate copy of it from Mr. Lessevitch on February 25, 1897. A signature mark on p. 129 of the reprint shows that it appeared in the January number (doubtless 1897), No. 1, and the pages are 118-131. The volume alone is not indicated.

The International Journal of Ethics, Philadelphia, Vol. VI, No. 4,
July, 1896, pp. 441-456.

THERE is a sense in which all science is ethical. Aside from the mere dogma, which is, however, sound, that truth is always in the long run beneficial, though usually based on the other dogma, which is not sound, that nature is always beneficent, it is susceptible of proof that every step in the process of revealing the secrets of the universe has resulted, or is likely to result, in some advantage to man. This is true even of political economy, which many besides Carlyle have supposed to have no other purpose than to teach the world how miserable it is, and a no less able expounder of that science than Mr. William Cunningham has remarked that "it has no *raison d'être*, except as directing conduct towards a given end."*

But this sense of the word "ethical" is a new one, and not the same that it has been the fashion to give it in times gone by. In common with all other persons who are now in or past middle life, I have always been kept familiar with the current meaning of the word *ethics* and with the leading doctrines of "moral philosophy." Although for a long time unable to analyze the subject or give a reason for the impressions that these teachings produced, nevertheless, I always felt that there was something fundamentally unsound in the general philosophy of conduct as inculcated in books, in the church, and in society at large. For

*"Politics and Economics: an Essay on the Nature of the Principles of Political Economy, together with a Survey of Recent Legislation." London, 1885, p. 12.

this reason I never wrote an article or delivered a lecture on ethics. It early became clear to me that the moral progress of the world, which history shows to have taken place, though in a less phenomenal way than its material progress, has been due only to a very limited extent, if at all, to ethical teaching, and that true moral progress, thus far at least, stands in some such relation to material progress as an effect stands to its cause.

In fact, the old ethics is cold, austere, ascetic, and forbidding, and does not pretend to have human happiness as its aim. On the contrary, it openly condemns nearly all forms of conduct that tend to produce happiness. The reasons for this will be stated later, and I will only say here that I believe this school of ethics is passing away. There is springing up in these last years of the nineteenth century what, at the risk of using a form of expression now becoming too common, I may call the *new ethics*,—an ethics which, though now only in the bud, as it were, is destined not only to blossom but to bear abundant fruit in the century now so close upon us. In contrast with the old ethics this new ethics will be warm, generous, sympathetic, and attractive. It will have for its avowed aim the increase of human happiness, and it will approve and enjoin all forms of conduct that contribute to that end.

Let us look a little more closely into the true nature of the ethical idea. Broadly viewed, it may be said that the ethical is nearly the same as the practical. This was admitted by Immanuel Kant,* who clearly saw the distinction above pointed out between the old and the new ethics. The ethical is the useful, and this is what is meant by saying that all science has an ethical basis. But the analysis is still incomplete.

I do not propose in this paper to be profoundly philosophical, much less metaphysical, but there is one psychological principle that lies at the foundation of the subject and must be considered before further progress can be made with it. It would need only to be stated were it not that it has been so generally rejected, and were it not that it is the essence of the old ethics to deny its validity. It will therefore be necessary not only to state it but to furnish proof of its truth. That principle is that the basis of ethics is *feeling*,—that pleasure and pain furnish the only tests of moral quality.

In searching for a moral element in action let us consider three hypothetical cases. We will suppose first that, by reason of his power to do so, one man exploits another, extorts from him that to which he is not in justice entitled, compels him to serve him without rendering an equivalent, or, in fact, enslaves him and profits by his enforced labor. All will agree that a moral quality resides in such an act and that it is morally wrong.

Let us suppose, in the second place, that a man exploits an in-

*"Kritik der reinen Vernunft," ed. Hartenstein. Leipzig, 1868, p. 529.

ferior creature, an animal, that he compels it to carry his burdens and to perform other labor useful to him. Under ordinary circumstances such action would not be considered wrong, but the reason is that in his treatment of the animal he is believed to confer as much benefit upon it as he requires of sacrifice. This is, in fact, the only ethical ground upon which human slavery has ever been defended. To show that this is the basis of popular judgment, let us suppose there to be no such reciprocity, and that the man abuses the animal. At once the moral quality enters into the action and it is condemned.

Finally, let us suppose that a man exploits the mineral kingdom, compels certain substances and material objects to minister to his wants, directs natural forces into channels that cause them to benefit him. In so doing he exercises the same qualities of mind as in the preceding cases. By reason of his intelligence he is able to gain an advantage over inorganic matter and physical forces and to derive from them benefits which they would not otherwise yield. The psychological principle is the same in all three cases.

Apply the same test here, and see if there is any way in which such action can be clothed with a moral quality. Can man in any way wrong the inorganic world? Obviously not. Where, then, lies the distinction between the first two and the third of these cases? It lies wholly in the fact that the man and the animal can feel, while the inorganic substance cannot. Sensibility to pain is all that makes a moral question possible. It would not be difficult to illustrate the same truth from the standpoint of pleasure. In fact, so frequently are pain and pleasure relative that most ethical questions, like the one respecting the animal, turn upon the relative amounts of each that are given or received in any course of conduct.

The practical and the useful are at bottom the agreeable, or at least a surplus of the agreeable over the disagreeable. Moral philosophers agree that the end of ethics is the *good*, as distinguished from that of science, which is the *true*, and from that of art, which is the *beautiful*. But what is the good but the useful, the practical, the agreeable? To 'cause happiness or relieve suffering is the real purpose of moral conduct. This is what is meant by "doing good," and many who deny that pleasure is the end of conduct work unceasingly to give pleasure to others.

This, too, is the true meaning of virtue,—conduct which in the long run is believed to yield a surplus of enjoyment,—while vice, although yielding a present pleasure of a low order and short duration, is believed to be followed by pains that more than counterbalance this, either to the agent himself or to others. There are all degrees in conduct from this point of view, and everybody knows that there are thousands of acts which lie so close

to the line between good and bad that their true ethical position is a question of opinion. There is, therefore, in modern, as there was in mediæval times, a real *casuistry* being debated, inaudibly for the most part, by large numbers of well-minded people.

X What, then, is the true field of ethics? It is that of human *conduct*. Conduct is not the same as *action*. It is only a species of action. Etymologically, the word connotes a sort of leading, vaguely implying difficulties in the way. The terms "right," "rectitude," etc., are ill-chosen, since they connote directness, which proper conduct never possesses. Conscience, the so-called ethical sense, always leads the agent through a sort of labyrinth. The least attempt to go straight, *i. e.*, to follow his impulses, which, being true natural forces, move on straight lines, brings him into conflict with the interests of others, which is to go wrong. Action, *i. e.*, the normal result of human motives, produces constant collisions in the interests of the agents, and it is this that ethics seeks to prevent. The ethical code is a digest for the guidance of men through this labyrinth. But the "path of rectitude" is a crooked and tortuous path, perpetually dodging in and out to avoid these collisions, which inflict pain. This, in so far, limits free activity. The windings and climbings required to keep in the ethical trail make a severe demand upon human energy and cost heavily.

Y The essence of the ethical idea, then, is *restraint*. It is a check upon human action. I have compared it to friction in machinery and called it "social friction."* In fact, so far as ethics can be called a science, it is simply the science of social friction. Mechanical progress has consisted largely in the successive steps taken in the direction of reducing friction. This might be illustrated in almost any department. That of transportation will serve my purpose.

As the first step, representing the minimum economy in this direction, may be instanced the "stone-boat." Every New England farmer knows what a stone-boat is. It has the shape of a flat-bottomed boat or scow, is taken into the stony field and loaded with stones. Then it is dragged by strong horses or oxen to the wall or fence which is built of these stones. Its whole under surface is in contact with the ground and thus gives the maximum friction, its economy consisting entirely in the ease with which it is loaded, so that any boy can "haul stone." A step in reducing the friction is sometimes taken by transforming the stone-boat into a sort of sled or "bob" with two thick runners.

From this it is a long way to a vehicle with wheels, in which part of the friction is transferred to the axle; and, from rude

* "Psychic Factors of Civilization," chap. xvii.

carts having wide felloes without tire and rough wooden axles to the Studebaker wagon and the improved types of carriages, the reduction in the amount of friction is immense.

The improvement of roads forms another series of steps, but the next long stride is taken when two wooden stringers are laid down for the wheels to run on and flanges put on the wheels to prevent them from running off. This is the tram in its simplest form. The chief improvement consists in putting cross-ties under these stringers and iron rails upon them. For these last the T-rail, first of iron and then of steel, is ultimately substituted.

But even the modern railroad does not represent the absolute minimum of friction. Besides the friction of axles, the wheel still rests to a width of several inches on the track. This last element it has been sought to overcome by a beveled wheel or a convex rail, reducing the contact to a single point. A still bolder innovation has been made, applicable at least to certain kinds of transportation, which abolishes the axle and reduces the friction to the minimum conceivable. This is the sphere propelled by air through a tube. Many are aware that this device was once introduced, though unsuccessfully, in conveying public documents from the National Capitol to the Government Printing Office at Washington. Mr. Brisbane's principle was certainly unassailable, and I am informed that it has been successfully applied in Paris and other European cities.

Now the moral progress of the world has consisted, and must continue to consist, in a similar series of steps in reducing the friction of society. When we look back over the history of the world and realize how much better it is than it once was, especially in public life, it looks as if we had come a long way; but when day after day we scan the heads of the newspapers and note the ever-recurring horrors of our present state, we are compelled to admit that the moral world is still in the stone-boat stage of its history, dragging its heavy body over the rugged field of human life with the utmost friction and the smallest ethical economy. It is the painfulness of this feature of life that so arouses the quickened sympathies of mankind and lends such an intense interest to all ethical questions.

I am bound to say that in all this there is far more heat than light, that the problem itself is misunderstood, that ethical teaching is in the main misdirected and ineffective. The positive side of ethics is lost sight of in the prominence of its negative side. The object has been, not to increase happiness but to mitigate suffering. This has always been the principal form of doing good. Even where it is sought to confer pleasure, it is only upon isolated individuals. In fact, the ethical method has been applied only to special cases, and not to underlying conditions. It is superficial and temporary, not fundamental and lasting. It is

therapeutic, not prophylactic, and its effect is always static, never dynamic. This desultory beneficence has been erected unto a creed and inculcated as the great duty. By many it is regarded as the supreme end of life, and philosophers have characterized it as the highest aim of science.*

In the face of all this it may seem presumptuous to raise a dissenting voice. But it is not without prolonged reflection that I have been compelled to conclude that, except in so far as it means the discovery of ways to diminish social friction, ethics not only is not a science, but is only an expression for the imperfection of the social order, an imperfection which, theoretically at least, is removable. The phenomena to which ethics relates constitute a transitional stage in social development.

The fundamental assumption of the old ethics is that there is something essentially evil in human nature. Its whole purpose is to destroy this evil element. No other science is wholly destructive. Nothing that is such can be a science. Suppose, for a moment, that it shall have accomplished its mission and eradicated the last vestige of preventable evil. Its "occupation's gone." The great science—that to which all others are "subsidiary"—†—has been eliminated, has eliminated itself! Or, imagine the condition of one of those excellent beings, familiar to everybody, whose only satisfaction in life consists in alleviating the sufferings of others, placed in a world in which there are no sufferings to alleviate! The intolerable boredom of such a state would have to be classed among the unpreventable evils. The avowed object of ethics is to contract and ultimately to remove the entire field of ethics. The highest moral state is one in which there shall be nothing that can be called moral.

We have seen that the so-called science of ethics is essentially negative, that it aims at restraint, that its tendency is to curb, repress, and ultimately destroy the alleged evil propensities of mankind. But all true science is essentially constructive. Where, then, is the fundamental fallacy which must lurk somewhere in the current moral philosophy? It lies in the very assumption of evil propensities. Such supposed propensities form an integral part of the natural forces that underlie the social world. They belong to the nature of man. They would never have been planted there if they had not been necessary to his development. They are evil only in so far as they conflict with individual or social interests. They do not differ in this respect from any other element of power in the world. If man only knew fire as

* The only two philosophical systems claiming to be universal, viz., those of Comte and Spencer, both make ethics the last, highest, and most important of the sciences.

† Spencer, "Data of Ethics," Preface, p. v.

something that destroys, that would be classed as an evil agency. Man may have passed through such a stage in his history. Certainly, this was his attitude towards electricity until within less than a century. The attitude changes in proportion as the knowledge of the nature of the agent increases. Strange as it may seem, the natural forces about which man knows least are those that reside within him. The latest sciences to be developed are those of mind and society,—psychology and sociology. But when man shall attain to an acquaintance with the laws governing these fields at all proportional to that which he has now acquired in the fields of physics and mechanics, the practical value of this knowledge will probably be as much greater than the other, as it is more difficult to acquire.

This knowledge of the psychic and social forces constitutes the basis of the new ethics. But it seems folly to call it ethics. The real science to which all these ethical considerations belong is *social science*. This is a true science. It is constructive. Like every other true science, it aims to utilize the forces operating within its domain. These are the social forces, and included in them are all the supposed evil propensities of human nature. Instead of condemning these, it recognizes them, and, after the manner in which science deals with all natural powers, it seeks first to render them harmless and then to make them useful. This is always possible so soon as their nature is known. Such has been the history of science in every other field. Such will be its history in the social field.

The method of science is not that of checking the flow of natural forces. It aims not to diminish, but to increase their effect. It restrains only where they are doing harm. But this is done by directing them into new courses where they no longer do harm. It seeks to find useful directions, and thus brings good out of evil. More than this. It unites many currents into one, and multiplies the power which it is desirable to have applied to any useful purpose. It assists nature to store its energy that it may expend it economically. Thus it secures far greater results than nature would achieve unaided, and renders these results beneficial, instead of indifferent or injurious.

All this social science aims to accomplish in the domain of the social forces. Its field is not restricted to conduct, but extends to all action. Its object is not to limit activity, but to increase it. It uses restraint only in order to direct it into useful avenues. But this results in the greatest freedom and the maximum activity. Man has already learned that liberty is not secured through anarchy, but through government. What is true in the political world is true in the social world. The new ethics, which is social science, seeks the utmost individual liberty. But, like every science, it aims at results. Its true object, to use the forcible expression of Mr. Benjamin Kidd, is

social efficiency. The social forces, once in their proper grooves, may all exert their utmost energy, as their friction is thus reduced to the minimum. Enthusiasm and zeal are beneficent powers when directed to useful ends. The emotions and even the passions of men are precious gifts to society, because they represent vast powers for the accomplishment of results. These results constitute social progress, which follows necessarily upon the liberation of the dynamic agencies of society.

It cannot, of course, be denied that there are catabolic elements in man's nature, elements productive of evil results. There are criminal impulses, often congenital, in dealing with which moral suasion is powerless, and which are therefore beyond the reach of the ethical code. Most of these are survivals from an antecedent state, savage or even animal. They were once useful, but are now mere vestiges, like the tonsils or the vermiform appendage—sources of social, as these are of physical disease. Where this is not the case, and the destructive elements are not atavistic but normal, such as anger, hate, jealousy, envy, and the rest, they are the products of a cramped social environment. They only appear when the free play of the healthy, harmless, anabolic sentiments is impeded or prevented. In the ancestral state these impulses passed into action and caused battles between rivals, the destruction of the weaker, and the ultimate restoration to the conquerors of liberty to pursue harmless pleasures. In society they result in immoral conduct or crime.

Now, it is precisely the function of social science to do away with this state of things, not by allowing free vent to catabolic impulses, but by removing the conditions under which they arise. As they are due to the constraint of the harmless impulses, the liberation of these latter prevents the former from manifesting themselves. This constitutes one of the best illustrations of the theory of the social forces and of social friction. Rage is the true homologue of the heat generated by friction. Remove the friction and the heat will not exist. It is only a "mode" of the general force employed. The social forces are identical with all other natural forces, even to the extent of conforming to the law of the transmutation of forces. The catabolic impulses are only modes of manifestation of the general psychic force; they are the forms which the natural or anabolic sentiments assume under frictional restraint.

The sociological point of view is thus seen to be precisely the opposite of the ethical point of view. It is that of the liberation instead of the restraint of human activity. In short, it is positive, not negative, and on this the whole distinction turns. It is not necessary to abandon the good as the end of action. Indeed, however insignificant the domain of feeling may be (and it is certainly an exceedingly restricted field rela-

tively to the whole universe of matter, space, and time), we are so circumstanced that we are compelled to regard it as everything to us. Therefore a positive even more than a negative ethics will make the good its end. But there is this manifest difference. Negative ethics sets bounds to its own scope and tends to consume itself. When all preventable evil shall disappear its course is run. As this is only theoretical and cannot probably be actualized, it can only be regarded as a logically fatal objection, but the practical objection is that the method of negative ethics would repress the normal activities of society which form the condition of positive ethics.

Is there, then, no limit to the extent to which the good may be increased? At first view it would seem that there must be such a limit. Reduced to its simplest expression, the good consists in the exercise of the faculties. To go into the physiology of this proposition would carry me too far, but I believe it can be sustained. Even an unexpected physical pleasure, such as that derived from a delicious morsel or a fragrant bouquet, presupposes a specialization of the nerves of taste or smell which has made the flavor or the odor agreeable, and the fact of experiencing such a pleasure is simply the exercise of a faculty which it has required untold ages to develop. The human body is a reservoir of a vast number of such capacities for enjoyment, and when we include the psychic faculties, æsthetic, intellectual, social, there is scarcely any limit even now to the wants which men possess to be satisfied. The good is nothing more nor less than the satisfaction of these wants.

But can we say of good as we may say of evil that its range is limited? Can all desires be conceived as gratified just as all pains may be conceived as removed? Not in the *élite* of the human race, certainly. In the animal, with only physical and a few social wants, this might be possible, but in man, with all his spiritual aspirations, it is inconceivable. Certain individuals with coarse organizations might perhaps be placed in the same class with animals in this respect, but the finer organizations cannot be so placed. It is not, however, with individuals that the question chiefly deals, but with the race as a whole. It is not a question of satisfying present as much as future wants. History furnishes plenty of examples of the creation of new wants.

In the domain of æsthetics this is very manifest. Music is a comparatively modern art. This is not altogether nor chiefly because musical notation, instruments, and methods were unknown to the ancients. It is principally because the love of music had not yet been created in the physical mechanism of the men of that time. There are still not only races but individuals of our own race, in whom it does not exist.

The Greeks and Romans were far advanced in architecture and sculpture, and they had the art of painting men and animals,

plants and buildings, all symmetrical objects. But there appears to be no evidence that they painted landscapes. They had not yet acquired the power of admiring the landscape. Cæsar marched his armies over the Alps and wrote much of his Commentaries on their summits, but he was utterly oblivious of their beauties. The love of nature as a whole, especially in its amorphous aspects,—mountains, waters, clouds, etc.,—is a recent acquirement, like the love of music.

In the domain of social life, the more refined sexual sentiments furnish a striking example of the power of man to acquire new wants. It is only in the European race that these have assumed any marked prominence, and even in this race they have been developed within comparatively recent times. Brilliant as were the intellectual achievements of the Greeks and Romans, and refined as were many of their moral and æsthetic perceptions, nothing in their literature conclusively proves that love with them meant more than the natural demands of the sexual instinct under the control of strong character and high intelligence. The romantic element of man's nature had not yet been developed. This constitutes a distinctly modern need. It is rooted in the lower passion and has grown out of it, but it is distinguished from it by the fact that the presence alone of the object is its satisfaction. This step is an exceedingly long one, and was gradually taken during the Middle Ages, assuming its developed proportions under the knights-errant and the troubadours from the eleventh to the thirteenth century. To-day it prevails throughout Europe, America, and other countries that have been settled by Europeans, and nowhere else. It has completely revolutionized the social life of these peoples and has purified their literature. This is why the older literature requires to be expurgated before it is fit for modern ears. It was too erotic. Modern literature, although it deals with love to a far greater extent than ancient, is chaste, because love means something entirely different from what it formerly meant. The needs of modern peoples growing out of it are much more numerous and imperative than before, but they are so pure and elevated that it is possible to treat them with the utmost freedom without causing the least shock to the finest sensibilities.

Again, true conjugal affection, as it exists to-day in enlightened communities, and which is a different thing from the spiritualized sexual sentiment last considered, although an outgrowth from it as that is an outgrowth from the sexual instinct, constitutes another and still more modern source of social enjoyment developed by civilization. Nor is it less important, for it has done more than all other influences combined to cement and solidify the most important of all social structures, the family. The monogamic sentiment is gaining strength and becoming more and more the bulwark of society. Those who see in the prevailing unrest

relative to marriage only signs of degeneracy fail to interpret these signs correctly. It is in reality due to the very strengthening that I have mentioned of the true bonds of conjugal affection, coupled with a rational and altogether proper determination on the part of individuals to accept, in so important a matter, nothing less than the genuine article.

I might go on and enumerate the proofs that the race is constantly acquiring new powers of enjoyment in the æsthetic, moral, social, and intellectual world, but these examples must suffice. Nor is there to be found the slightest evidence that its capacity for such acquisition will ever be exhausted. This, then, is the basis for a positive ethics which cannot consume itself. It stands on the same footing with every other science and is in all essential respects a true science. These higher aspirations, which are the spiritual representatives of the lower wants, sublimated by intelligence and culture, are, like the bodily cravings out of which they have evolved, *faculties*—i. e., powers, and contribute to the full extent of their intensity to the motor strength of society. The new ethics aims not only to liberate all these social forces, but to utilize them in propelling the machinery of society.

I have thus far only spoken of the dynamic agencies of society. These would, indeed, be unmanageable without the aid of a directive agency. This is the *intellect*, which serves as a guide to the social forces. And right here lies the explanation of the sterility of the old or negative ethics. It does not recognize the reason as a factor. It does not attempt to guide or direct the destructive elements of social activity. It treats them as only baneful, and wages a crusade against them. It invents such epithets as sin, vice, immorality, and seeks to stamp these out. It denounces, anathematizes, condemns, or else it pleads, expostulates, and exhorts. All this, if separated from the influence of example and personal magnetism, is without effect—mere *brutum fulmen*. As well might King Canute command the sea to retire, or Pope Calixtus III. drive Halley's comet from the skies.

The method of science under the guidance of intelligence is to attract the natural forces, not to drive them; to free them, not to fetter them. There is no more misleading expression than the one so commonly used to the effect that Franklin "chained the lightning." So far from his chaining it, he found for it an unobstructed path, albeit one in following which it not only could do no harm, but could do and has done incalculable good. And all subsequent dealings on the part of science with this wonderful agent have only served to increase its power. The most violent thunderbolt that ever rent the clouds was not equal to the great Baltimore dynamo that recently forced a train through the tunnel against the power of the strongest locomotive.

And so it will be with the social forces when once we learn

how to control and utilize them. This is social science in its applied stage. Its purpose is to find unobstructed paths along which they may operate to their full extent. It will minimize the social friction and utilize the social energy. It will devise the requisite social apparatus to this end. Just as material progress under science consists in the development of the practical arts of which machinery is the highest expression, so social progress will consist in the development of the supreme social art of which social machinery will constitute the highest manifestation.

This is not, of course, the place, even if it were advisable, to offer any hints as to the character which this social machinery is likely to assume. As well might our ancestors have sought to predict the machinery of to-day. But on numerous previous occasions I have attempted to indicate some of the initial steps in social invention. My chief purpose, however, has been to emphasize the fact that sociology is a science, that it is a domain of natural forces of which man may take advantage precisely as he has taken advantage of the physical forces of nature. Until this truth can be perceived and vividly brought home, not only to philosophers, but especially to men of affairs, statesmen, and legislators, it is vain to speculate upon methods and details.

It is only within the scope of the present paper to deal with the ethical aspects of the question, and I must end as I began by repeating that all science is essentially ethical. Social science is more so than other sciences only because it deals more directly and exclusively with the collective welfare of mankind. It seeks not merely to reduce the social friction and thus accomplish all that the old ethics has so vainly striven to secure, viz., negative moral progress, but also and chiefly to put the manifold existing and prospective wants of mankind in the way of satisfaction, and thus to bring about a progressive and unlimited train of benefits and a truly scientific or positive moral progress.

I have called these ethical aspects. In this I may be mistaken, but it is only a question of the meaning of words. As I said at the outset, I have never entered the field of ethics, and if the universal betterment of man's estate does not belong to ethics, it is a field into which I do not care to enter.

June 24, 1896—Ætat. 55.

412. Review of Professor Giddings's Principles of Sociology

History.—Written April 8–26, 1896. On February 18, 1896, Mr. Henry R. Seager, on the staff of the *Annals* of the American Academy of Political and Social Science, wrote to me relative to reviewing the forthcoming work of Professor Giddings on *Sociology*. He had recently seen Professor Giddings in New York and learned that his book was in press. I suppose I consented to do so. On February 25th, he wrote again saying that he would send me the book as soon as it was out, and that they would be glad to have the review at an early date. On March 2, a copy of the *Principles of Sociology* arrived direct from the publishers, with the indication that it was sent at the request of the author. I proceeded at once to read it, which occupied exactly one month. Professor Giddings wrote me on March 6, saying that he had asked the publishers to send me the book. In this letter he apologized for the scant reference to my work in his book, and expressed a high appreciation for it. In my reply I told him that I had been asked to review his book for the *Annals*, but Mr. Seager had already told him this. I probably said something to the effect that if there were criticisms in my review he must not regard them as personal, for he said in this letter:

"I can say amen to every word you say about reviewing. Nothing seems to me more demoralizing than to confound personal considerations with the function of the critic. I know that you will find much in my book to disagree with and doubtless to disapprove, and errors of statement and of logic that ought to be pointed out, and I should be sorry indeed if you did not frankly do so."

On April 8, I received a copy of the book from Philadelphia, which I gave to Miss Sarah E. Simons. In a letter from Mr. Seager dated April 11, he says:

"We shall be very glad to publish an article from your pen of such length as you may determine. I hope that you will take occasion in your article to point out and criticise those parts of Professor Giddings' work with which you are in disagreement. The book has been so generally reviewed already, or will have been so before we can get your article before the public, that a descriptive review is no longer needed."

By April 9, it was all blocked out and contained about 10,000 words. I proceeded at once to put it into final form. It was sent on the 27th. In accepting it on April 29, Mr. Seager said, "It is exactly what we wanted for publication in the *Annals*, and will be printed in the July number." Galley proof was received on May 8, and page proof on May 22. In carefully reading the first proof Mr. Seager thought he detected a few sentences in which I had made it too strong, or as he said, a little "harsh," and he suggested a few changes and omissions, which I allowed him to make. One was a criticism of the title, which is the same as one of Herbert Spencer's works, and was certainly open to criticism.

I had had some correspondence with Dr. Small on the subject and he was anxious to know what I was saying, so I sent him a duplicate copy of the page proof, which he read and returned. I received another letter from Professor Giddings, dated June 12, on the eve of his departure for Europe, in which he takes occasion to say:

"I am sincerely glad that your review of my book is to state the positions in which you disagree with me, rather than those in which we agree. I shall value the negative criticism far more than I should a series of non-critical paragraphs about the things that you like in my exposition. I expect to learn and to profit by your objections."

A copy of the *Annals* for July containing my article reached me on June 24. It was quite a coincidence that this and the *International Journal of Ethics*, containing my *Ethical Aspects of Social Science*, arrived by the same mail. My reprints came on July 1. A good many responses were received from those to whom I sent copies of the article. On July 6, Dr. R. S. Woodward, then Dean of the Faculty of Pure Science of Columbia University, wrote as follows:

"I wish to thank you for a copy of your vigorous review of the *Principles of Sociology* of Prof. Giddings. It has proved so interesting and instructive that I have just read every word of it."

Other valuable acknowledgments were from Dr. John Graham Brooks and Professor George G. Wilson. The latter said:

"To me your criticisms seem very just and at the same time to give Professor Giddings full credit for the true excellence of the work which he has really done."

This article stands first in the July number, which is the first number in the volume. It therefore begins on page one.

Annals of the American Academy of Political and Social Science, Philadelphia, Vol. VIII, No. 1, July, 1896, pp. 1-31; Reprint, Philadelphia, June 30, 1896, pp. 1-31, Publications of the Academy, No. 176.

THERE has at last appeared an American work on the Principles of Sociology,* written by one who holds the chair of sociology in one of the leading universities of the country. Heretofore, so far as I am aware, only two works (exclusive of articles and reviews) containing the word sociology in their titles have been issued in America. One of these appeared thirteen years ago, and though even larger than the present one, did not profess to deal with the whole subject, but only with one of its most advanced phases. The other work, emanating from the same institution as this one, treats of sociology from the standpoint of statistics.

The present work purports to cover the whole ground of sociological science and is adapted for use as a text-book in the higher institutions of learning. Issuing as it does from one of the greatest publishing houses of the world representing the reading public of both hemispheres, there can be no doubt that it will command the attention of serious people everywhere.

The book has been anxiously waited for during many months, so that its arrival is no surprise. Speculation as to its contents has been rife among those most interested, and not a few have freely expressed their estimate of its merits in advance. Some have felt sure that it would present an entirely new system hitherto undreamed of in anyone's philosophy, while all expected a great display of originality at least, whatever might be the grounds of justification therefor. It is safe to say that nearly all guessed wrong, as the eminently sober and practical treatise before us is as far as possible removed from a *coup de théâtre*. Neither will it be the target at which some perhaps have hoped

*"The Principles of Sociology. An Analysis of the Phenomena of Association and of Social Organization." By FRANKLIN HENRY GIDDINGS, M.A., Professor of Sociology in Columbia University in the City of New York. Pp. 476. Price \$3.00. New York and London: Macmillan & Co., 1896.

to hurl the lance of criticism. It cannot be called a brilliant effort. The genius it displays is of the kind described by Carlyle as consisting of an unlimited capacity for work—the *attention suivie* of Helvetius and the *longue patience* of Buffon. It is certainly a laborious, and, it should be added, an important and valuable book. The author has worked for others and seems to have made good use of exceptional opportunities. It is furthermore a careful work, painstaking and faithful in just those dry and unattractive appointments that almost everyone shuns and neglects. Every chapter seems to have been worked over and over until made as perfect as circumstances would permit, and no amount of rummaging among musty volumes has been deemed too great if only one more fact could thereby be added to the bulky evidence.

Some one has said that the number of times a book will be read depends on the number of times it has been written. This hyperbole well expresses the truth that the books that live are those upon which the greatest labor and research have been bestowed. Those impatient and feverish productions that only contain crude and undigested thoughts, that quote at random or from memory if at all, and that merely spin the web that is secreted from the brains of their writers, have no permanent value, make no deep impression upon their readers, are skimmed over as carelessly as they were written, and are shoved aside and forgotten along with the very names of their authors. But, assuming that the theme is worth the labor, those works that are elaborated with care, toil, and patience, that embody much well-directed research, and that not merely contain the thought but leave behind it a luminous trail to mark the steps in the protracted quest—such works are immortal, since it is through them that the present is cemented to the past and the structure of human knowledge is slowly and laboriously reared. It is in this latter class, if I mistake not, that Professor Giddings' "Principles of Sociology" is destined to be placed.

Such being the general character of the work, it certainly deserves a respectful treatment, and I would not have anyone mistake such strictures as I shall make upon other aspects of it, whether special or general, for a lack of appreciation of the thoroughly scientific spirit that has presided over its preparation. It is a remarkably even book, denoting a continuous purpose throughout. The style is dignified and strong, and is free from anything that tends to divert the reader's attention from the matter and fix it on the manner, thereby correspondingly diminishing the force of the idea. Although manifestly intended for use as a text-book for advanced students, the subject is not needlessly staked off into a multitude of subordinate parts, often supposed necessary to help students to think; nor is it otherwise disfigured by scholastic features so common in text-books, but which only

have the effect of making them forbidding. The book is simply divided into chapters whose length depends upon the amount of treatment the several subjects require. This imparts to the work a solid and virile appearance and relieves it of that air of elementariness which often repels the serious student.

Notwithstanding all these obvious merits it cannot properly be called an interesting book. Text-books are not usually interesting. The mere presentation of a body of established knowledge, however successfully done, rarely takes a firm hold of any but those who happen to be seeking just such a class of information. It is only bold excursions into new fields that chain the attention. Occasionally a text-book practically answers this description, but then it is devoted to some small part of a larger science. But generally the only interesting books relating to serious subjects are those of independent special investigators, who, untrammelled by pedagogic requirements, push some one of the Briarean arms of science far out into unexplored regions. The reader whom the subject interests at all will follow such an excursion with a zeal comparable to that with which accounts of analogous geographical explorations are read by adventurous youths.

The present work does not belong to this class. Although sociology is a new science, and although this is one of the few books treating of it, still there is practically nothing new in the book. It is almost exclusively a compilation, but it is a compilation by one who knows what he wants and how to secure it. The most useful work that is now done in any science is that which focalizes the scattered knowledge of others. Nor is this kind of work unscientific. Special investigators are rarely capable of classifying facts. A compilation such as this virtually amounts to a classification. It is the very making of a science out of its raw materials.

As nearly every one who would care to read this paper will have probably already read the book itself, there seems to be scarcely any justification for giving it a descriptive review. The present paper may therefore be looked upon as merely a contribution to social science, based chiefly upon certain considerations brought forward by Professor Giddings in this work.

The dual title of the book will suggest to most minds two somewhat distinct ideas. The "principles" of a science are something besides an analysis of phenomena. Putting the contents with the title, it may be said in all truth that the former agree far better with the second title than with the first. In fact, it is difficult to see what the book has to do with the principles of sociology. It is devoted almost exclusively to the facts of association and social organization, and while it may be admitted that many of the factors leading to these results are considered, and while it cannot be denied that such factors are entitled to be called prin-

ciples in the popular sense, still we look in vain anywhere in the book for any of the fundamental principles of a science of sociology, or any attempt to show that sociology is a science except as being a systematic domain of facts and phenomena. That it is a science in the sense of being a domain of natural forces and uniform laws, such as astronomy, physics and chemistry, or even as biology as now taught, or as "psychophysics," no intimation is to be found between these covers.

This, however, is nothing more than must be said of Herbert Spencer's "Principles of Sociology" so far as published. The work under review might well have been called: Elements of Sociology, omitting, as did Lord Kames in his "Elements of Criticism," the *vielsagend* definite article on the express ground of disclaiming an exhaustive treatment. With a modest title of this kind the book would be read with increasing interest and laid down with unexpected satisfaction instead of with a sense of "great expectations" unrealized.

But we are to deal with the book rather than the title, and here we find that it is not alone in the title that it imitates the great work of Mr. Spencer. The classification of topics is, it is true, very different, and there is some effort to avoid a similarity of method, but in the two most important respects the two treatises are in harmony. These are, first, in confining sociology chiefly to anthropology, and second, in adhering strictly to the "natural history method" of looking upon society as something absolutely passive, to be analyzed and dissected like the carcass of a dead animal.

To say that there is nothing new in the book is not the same as to say that there is nothing peculiarly the author's own. The details of his method and classification had all been announced by him before. Most of this is contained in his "Theory of Sociology," published nearly two years ago.* The rest is to be found in his numerous other papers and discussions. But he has here filled in the body of the matter and rounded it out with a great wealth of illustration. This is what constitutes the chief merit of the work. His classification is *une classification comme une autre*, and another would have done as well.

He professes to reject the biological view and to adopt the psychological one. In this latter he goes too far. When he says that "sociology is a psychological science"† he says too much if his words mean anything. There is only one "psychological science," and that is psychology. It is also too much to say that "all true social facts are psychical in their nature,"‡ or that "sociology is the science of the association of minds."§ The truth is that sociology has a psychologic basis, *i. e.*, the forces of

* Supplement to the ANNALS, Vol. v. No. 1, July, 1894.

† Preface, p. v.

‡ P. 3.

§ P. 25.

society are primarily psychic. He states this truth very clearly when he says that "the motive forces of political life, as of economic life, are the desires of men."* Finally, he goes too far in denying that the individual mind working for the individual's ends, entirely apart from any *consensus*, is attended with social consequences. In fact, by far the greater part of all social effects are the result of this independent action of individuals, totally regardless of everything that other individuals are doing.

Sociology is defined as "the systematic description and explanation of society viewed as a whole," or, "the general sciences of social phenomena."† In another place‡ he defines it as "an explanation of social phenomena in terms of natural causation," or specifically as "an interpretation of social phenomena in terms of psychical activity, organic adjustment, natural selection, and the conservation of energy." "It is," he says, "strictly an explanatory science, fortifying induction by deduction, and referring effects to veritable causes." Supposing that he means: fortifying deduction by induction, instead of the reverse, these definitions fairly reflect this method of treatment. It is essentially "explanatory." There are thousands of facts that need to be explained, and sociology is supposed to be concerned chiefly in explaining them.

He discusses at some length the relation of sociology to the special social sciences, with a general disposition to consider it in some way distinct from any one of them and from all of them taken together, still this distinction is nowhere clearly drawn. "Sociology," he says, "is a general social science, but a general science is not necessarily a group of sciences. No doubt the word will continue to be used as a short term for the social sciences taken collectively."§ His final conclusion on this question is probably best summed up in the following sentence: "Therefore while sociology in the broadest sense of the word is the comprehensive science of society, coextensive with the entire field of the special social sciences, in a narrower sense, and for purpose of university study and of general exposition, it may be defined as the science of social elements and first principles."¶ This seems at first sight to be very different from the definitions previously quoted, but it is necessary to remember what he means by "principles," and that, as already shown, he treats the word as if synonymous with "elements."

Much space is devoted to the consideration of the several alleged unitary principles on which as many authors have essayed to explain all the facts of human association. The principal of these are Gumplowicz's doctrine of the struggle of races resulting in their forcible amalgamation, Novicow's similar doctrine of intellectual assimilation as the result of conflict, De Greef's modification of the doctrine of social contract, Tarde's principle of

* P. 37.

† Pp. 5-6.

‡ P. 419.

§ P. 31.

¶ P. 33.

imitation, and Durkheim's idea of unconscious mutual coercion. This last is similar to Dr. Ross' "social control," but is probably much narrower than the latter will prove to be when fully developed. Of all these conceptions Professor Giddings lays by far the most stress on the law of imitation, which he justly regards as very fundamental and well-nigh universal. The fact, however, seems to be lost sight of that this principle has an important counterpart, and that there is an opposite, or exactly contrary principle. In fact, the principle of imitation is primarily biological, but also highly anthropological, while the opposite one is strictly sociological. It consists in a hatred or dread of imitation, an effort to avoid the ways of others and a refusal to follow any prescribed course. This *misomimetism*, or *mimophobia*, as it may be called, is a product of intellectual development, and is based on the recognition of the law of imitation in the lower stages of progress, and on the observation that that law marks a low degree of development. To avoid yielding to it is to manifest a high degree of development. The greater the intelligence the greater will be the effort to conceal the motives to action, and the more these motives will become internal and psychical instead of external and physical. A comparison of the negro with the white race brings this out clearly, but it is scarcely less obvious from a comparison of people of the same race but of different grades of intelligence. The relative calculability of human actions depends upon it, and it accounts for both the studied emotional indifference of a class of theatre-goers and the high excellence and originality of the best mental work done by man. In great minds it produces a true originality, but in small minds it results in a false originality which is not only not productive but is positively obstructive. It causes the valuable work done by others to be ignored and belittled and emphasis to be laid on things that are unimportant. In this way problems that have been put on the high road to solution are often set back to where they were before anything was done. This intense individuality is one of the worst impediments to intellectual progress to-day, because it is next to impossible to secure the recognition of a new principle however important. The evil is aggravated by the fact that small minds are often found in high places and great ones in low places, whereby worthy contributions are forgotten and unworthy ones exaggerated. In this last phenomenon, however, the law of imitation is also a factor, since it is deemed proper to imitate whatever emanates from a highly respectable source.

If sociology consisted in the study of this class of principles there would be scarcely any limit to the number that might be detected and illustrated. Professor Giddings gives to each of these something like its true weight, but he brings forward one of his own, which, in strict imitation of the other panacea-mongers whom he criticises, he exalts to the first rank and places at the

very base of the science of sociology. Indeed, he attempts to build the superstructure chiefly on this foundation, and this probably constitutes the weakest feature of the book, although there can be no doubt that it is the source of the greater part of what is original in it. This new sociological catholicon is what the author is pleased to call the "consciousness of kind," which he defines as "a state of consciousness in which any being, whether low or high in the scale of life, recognizes another conscious being as of like kind with itself."* This is not the first time that he had announced this principle. In a discussion with Dr. Small in the ANNALS† he wrote: -

"I have never thought or spoken of mere physical contact, hostile or friendly, as constituting association or a society. It is association *if and only if accompanied by a consciousness on the part of each of the creatures implicated that the creatures with which it comes in contact are like itself.*" This consciousness of kind is the elementary, the generic social fact; it is sympathy, fellow feeling in the literal as distinguished from the popular sense of the word."

Dr. Small, in replying to this in the next number of the ANNALS,‡ classed the doctrine along with "other remote metaphysical categories." Nobody certainly supposed that it was destined to be rehabilitated and made the very corner-stone of the whole science of sociology.

It is this important rôle which it is made to play that alone justifies a somewhat careful examination of it. It cannot be denied that a recognition of likeness among living beings is a distinctive psychic attribute of great moment. It is the basis of much biological discussion and is partially correlated with the physical characters which constitute species. I say partially, because the phenomena of hybridity show that the correlation is not exact. It is, therefore, not the importance of the fact that is in question, but the correctness of calling it a sociological principle. The idea of its being anything new, except perhaps the particular and fairly happy form of words by which it is here designated, is simply preposterous. It is a fundamental fact of biology but not specially of sociology. Nearly every biological truth runs through the whole animal kingdom including man, and it would be as correct to call one of these a sociological principle as another. There are many such principles that are much more fundamental than this one. To take one that resembles it in being also of a psychic nature, we might instance reflex action. There is as much reason why this should be regarded as the primary sociological principle as the one under consideration, and it would be even easier to follow its workings throughout society and to illustrate its developed manifestations among enlightened

* Preface, p. v; also, p. 17.

† Vol. v, No. 5, March, 1895, p. 750.

‡ Vol. v, No. 6, May, 1895, p. 950.

peoples. Professor Giddings quotes Leidy to the effect that *Amoebæ* will devour diatoms, desmids, and rotifers, but are prevented by the consciousness of kind from devouring one another, and he concludes that "no other discrimination of sociological significance is of equal generality, and this is the conclusive proof of the truth of my contention that the consciousness of kind is the primordial subjective fact in social phenomena."* Not at all. Sentiency is the "primordial subjective fact." He proves too much. His principle is altogether too "primordial," and yet not the most primordial.

If he had pursued his investigations into the lower organisms a little farther he would have found that certain Infusoria, instead of avoiding each other, actually devour each other, *i. e.*, they mutually absorb each other by a process called conjugation. Maupas has shown that this occurs at a stage anterior to any true sexual differentiation. This is, of course, a form of reproduction, and what is called fertilization in the higher animals is a similar process, except that here there is a difference between the two kinds of cells which is called sexual. It is facts like these that have emboldened such investigators as Claude Bernard† and Ernst Haeckel‡ to declare that reproduction is at bottom a form of nutrition. The consciousness of kind, therefore, acts here in the opposite way from what it does in the *Amoeba*. That animals recognize their likes both for purposes of attraction and repulsion cannot of course be denied. It is one of the earliest manifestations of the perceptive psychic faculty. It is only a part of the wider truth that they perceive their environment and profit by such perception. They recognize other things also. They know their enemies. They distinguish nutritious from in-nutritious substances. They perceive and avoid obstacles.§

In seeking to justify his fundamental social concept Professor Giddings has displayed much ingenuity, and many of the applications made are acute and interesting, as where he makes it account for national pride and the common idea of each people that it is in some way superior, or specially "chosen," and that all others are merely "*οἱ βάρβαροι*"; or where he applies it to the theogonies as the principle on which each race makes its gods in its own image; likewise its application to political parties, social classes, religious sectarianism, and personal congeniality and companionableness. All these he thinks are based on a sort of intuitive perception of similarity which he identifies with the consciousness of kind. But these attempts have carried him much too far and led him to ignore the broader truth that among human beings it is the rational though dimly felt recognition of the advantageous-

* P. 107.

† "*Revue scientifique*," September 26, 1874, pp. 289, 290.

‡ "*Generelle Morphologie*," Vol. ii, p. 16.

§ Cf. "The Psychic Factors of Civilization," Chaps. XXI, XXII.

ness of association that has chiefly caused it, while in animals it has been no less its advantage, but secured through instincts developed by natural selection.*

In his chapter on the "Social Mind," based, like everything else in the book, on the "consciousness of kind," he has scarcely gone beyond the customary attempt to show that nearly everything in society presupposes a certain consensus of opinion, or at least of feeling among its members. But neither he nor any one else, so far as I am aware, has adequately set forth the essential character of this consensus. Almost always this is left out of view and attention drawn to certain mere accidents that often attend it. In order to have peace in a community it is necessary that not merely a majority, but practically all the people constituting it shall think alike on certain very fundamental subjects. Partisan strife may run high, but the questions discussed are relatively incidental. In England no one raises the question whether the British Constitution shall prevail or be set at naught, because, no matter how widely they may differ on other questions, they are all agreed on that one. In America, even in South America, the maintenance of "republican institutions," as each country understands them, forms no part of political debates. While crimes against person and property are constantly committed by a small class in every civilized nation no one seriously questions the right and duty of the state to suppress them as far as possible. Although every conceivable form of marriage may and does exist in all monogamous countries, still, the question as to what constitutes the best form of marriage is never discussed because so nearly all agree that monogamy is the best form. And so with any number of social states and conditions that might be mentioned showing that there is what might be called a social opinion or social mind which is essential to the coherence of the social aggregate. Neither is it exactly the same as that which is meant by "public opinion," since this usually refers rather to differences than to harmony in the thoughts of men, and stands for the preponderance of opinion on one side or the other of questions that are more or less in dispute, *i. e.*, questions which society thereby admits to be debatable.

The consideration of the fundamentals above referred to, about which, for the given community, discussion is over, and which have therefore become an integral part of the mental constitution of society, is much more important to the sociologist than a study of the facts presented by mobs and panics, upon which attention is usually concentrated in discussions of "social consciousness." Professor Giddings no doubt has a vague idea of this distinction, and his quotation from Lewes is much to the point, still, I am bound to say, he has not clearly brought out this "principle." His characterization of tradition as social memory

* See the *American Journal of Sociology*, Vol. i., January, 1896, p. 432.

is excellent, and there are many other good things in this important but unduly foreshortened chapter.

In keeping with his general method, as above described, he has, logically enough, set aside the chief consideration in connection with the "social mind." In another place,* and quite out of its natural position, he has, indeed, shown what Spencer also admitted, that government is in the long run as good as the people choose to make it, and that even despotism is virtually sustained by them and despots encouraged by manifestations of popular approval. But that the social mind, and especially the social will, are really embodied in and carried out by government, as the homologue, however crude and imperfect, of the individual brain, is nowhere stated, and we are driven to infer that he either does not accept this view or else that he has omitted one of the most fundamental of all sociological considerations.

From the standpoint of the present writer, the gravest defect of the book is, of course, the absence of any scientific basis. Science, as distinguished from isolated items of knowledge, deals with the *laws* of phenomena. The phenomena themselves are of course essential to science, but they do not alone constitute it. Laws are general expressions for the effects of natural causes operating in a uniform manner. Such causes are simply the forces, as they are called, which the given science has to deal with. In physics the forces treated are the gravitant and radiant forces, in chemistry they are mainly elective affinities, in biology they are usually called vital forces, in psychology they are nerve currents. These are all, however, merely modes of manifestation of one universal force, and may be resolved into it or transmuted into one another, but it is convenient to speak of them as so many distinct forces. If sociology is a science there must be a social force. Professor Giddings admits the existence of such a force, and a passage quoted near the beginning of this paper shows that he has a fairly clear conception of its general nature; we also find him speaking of the "gigantic forces of the social mind."† One would have naturally supposed that anything so basic as this would be treated at full length in a work on "The Principles of Sociology." The proper place, the book being for the use of adult students, would seem to be near the beginning. We are therefore surprised to find that only a short chapter of twenty pages bears any such title, and that this is the last but one in the book. The surprise is, however, greatly heightened when we come to read this chapter. Only in the last three pages is there any allusion to social forces, and here he seems to confound them with physical forces. After remarking that "volition" (a forceless word merely implying choice) is a true cause, he goes on to say: "Therefore, while affirming the reality of sociological forces that are distinctly different from merely biological and

* Pp. 389, 390.

† P. 37.

from merely physical forces, the sociologist is careful to add that they are different only as products are different from factors, only as protoplasm is different from certain quantities of oxygen, hydrogen, nitrogen, and carbon,"* etc. And further: "Enormous as is the social energy, it is always a definite quantity. Every unit of it has been taken up from the physical environment, and no changes of form can increase the amount. What is used in one way is absolutely withdrawn from other modes of expenditure. If the available energy of the environment is wasted or in any way diminished, the social activity also must diminish."† These surely are generalities that fairly scintillate. They have an intensely scientific sound. Let us examine them. In the first place there is a certain ambiguity about them. If it is merely meant that man cannot exhaust the natural resources of the earth without suffering the consequences, they are indeed true but trite. But if, as it is perhaps more charitable to assume, it is meant that the social forces are themselves a fixed quantity that cannot be increased, then the propositions are not true.

In another place‡ our author discourses in an apparently learned manner on the conservation of energy and the transmutation of forces. His reasoning here is much to the same effect and equally unsound, if I understand it. The whole may be treated under one. I grant that "all social energy is transmuted physical energy," and also that to a limited extent "social energies are reconverted into physical forces," but I deny the implied reciprocity and equality of these processes. It does not follow from the law of the conservation of energy. I stated the principle in 1893 in a form which I could not now improve upon: "The parallel between physics and *psychics*, as thus defined, fails at one point. While, so far as is known, there has never been any loss of psychic energy, it is certain that there has been an immense increase of it. Indeed, time was when none existed. It has developed or been evolved with all organic nature and has increased *pari passu* with the increase of mind and the development of brain. Complete analogy between the organic and inorganic forces is not reached until it is recognized that the former are derived from the latter, and that vital and psychic forces are simply additional forms of the universal force."§

To say that the social energy cannot be increased is tantamount to saying that it cannot have been introduced. This would assume that society and man had always existed, whereas we know that the human record began at about the time that the geological record proper ended, and that the human period at the very maximum estimate (500,000 years) is only about a two-hundredth part of the life period of the globe (say 100,000,000 years). Society is only a local phenomenon, very restricted both

* P. 417.

† P. 419.

‡ Pp. 363-366.

§ The Psychic Factors of Civilization, pp. 55-56.

in its extent and duration, and social energy is simply one of the later modes of manifestation, of the universal energy, due to a peculiar combination of conditions. Just as mechanical energy may be converted into heat at any given point, so cosmic energy may be and has been converted into vital, psychic, and social energy wherever the conditions have been favorable for such a transmutation. This process is still going on and social energy was never so rapidly generated as at the present time. Every fresh discovery of science and every new improvement in machinery, the products of psychic activity, transfers another large quantity of cosmic energy to the domain of the social forces, there to remain, so far as any one can foresee, forever.

It is perhaps well that Professor Giddings has not attempted to any considerable extent to deal with principles, for wherever he has sought to do so he has manifested the same inability to handle them philosophically. He professes to have derived his social philosophy chiefly from Spencer, but admits that it is not to be found "in those of his books that bear sociological titles,"* and he finds them "scattered throughout the second half of the volume called 'First Principles.'" I agree that there is more real sociology there than there is in his "Principles of Sociology," and this bears about the same proportion to the latter that the treatment of sociology proper in Professor Giddings' book bears to the whole book. In this respect the two treatises are so nearly alike that the latter might be regarded as an attempt to condense the former into one volume by a sort of "horizontal reduction."

Our author makes a number of invidious comparisons between Spencer and Comte, with the customary disparaging references to the latter, made on the sociological principle of "imitation," and, like all similar ones, for the two reasons, that it is fashionable, and that he does not know any better. He has put the first edition of Comte's "Positive Philosophy" into his bibliography, and makes a few references to it, doubtless the result of successful rummaging, but nothing is more certain than that he is utterly ignorant of Comte. Otherwise he would scarcely say that "Comte used the term 'social statics' in a merely rhetorical way, as a name for social order, and 'social dynamics' as a name for progress. Mr. Spencer, more scientific, adheres to precise physical notions."† A more exact reversal of the truth could not have been formulated. Comte used social statics and social dynamics as the natural subdivisions of "social physics," and devoted three volumes (half the course) to their systematic elaboration. Of course he maintained that these subdivisions relate respectively to order and progress, for this is the truth. Spencer did in reality use the term "Social Statics" "in a merely rhetorical way," and professed to write a book on it, but the book does not treat of that subject at all. It has transpired that even this was

* P. 5.

† P. 9.

Comte's term filtered through Mill and caught up by Spencer (without knowing the source) as a fine sounding name for a book. As regards social dynamics, I am not aware that he has ever used the expression with approval. The very idea of a scientific use of either expression seemed to be wholly new to him in 1864 when he wrote his "Reasons for Dissenting from the Philosophy of M. Comte," where he says: "Respecting M. Comte's application of the words *statics* and *dynamics* to social phenomena, now that I know what it is, I will only say that while I perfectly understand how, by a defensible extension of their mathematical meanings, the one may be used to indicate social *functions in balance*, and the other social *functions out of balance*, I am quite at a loss to understand how the phenomena of *structure* can be included in the one any more than in the other."* How an author who thus criticises the subdivision in question can be said to employ it in his system in a scientific sense, I am quite unable to see.

"But Comte," says Professor Giddings, "used these terms loosely. His social statics was little more than description; his social dynamics little more than history." The first of these propositions is utterly unsupported. In his fiftieth lecture toward the end of Vol. IV he sets forth his conception of social statics, and there is not a word of descriptive sociology in that lecture, not a name of a tribe of men nor mention of a primitive custom. It deals all through with the theory as he understood it. The second of the above quoted propositions has scarcely more justification. The fifty-first lecture is entitled: "*Lois fondamentales de la dynamique sociale, ou théorie générale du progrès naturel de l'humanité.*" It contains no history but deals strictly with theory. The fifth and sixth volumes, however, which immediately follow these two lectures on the theory, do profess to be historical and to deal with the natural development of society. But what kind of history is it? Certainly not the ordinary kind, as Professor Giddings' language would imply. In fact, it presupposes an acquaintance on the part of the reader with all that commonly passes for history, and really treats of nothing but the underlying principles. It is one of the profoundest parts of this great work, and its perusal extorted from John Stuart Mill the following remark:

"These propositions having been laid down as the first principles of social dynamics, M. Comte proceeds to verify and apply them by a connected view of universal history. This survey nearly fills two large volumes, above a third of the work, in all of which there is scarcely a sentence that does not add an idea. We regard it as by far his greatest achievement, except his review of the sciences, and in some respects more striking even than that. We wish it were practicable in the compass of an

* Appendix to the "Classification of the Sciences," London and New York: 1864, p. 44.

essay like the present, to give even a faint conception of the extraordinary merits of this historical analysis. It must be read to be appreciated. Whoever disbelieves that the philosophy of history can be made a science, should suspend his judgment until he has read these volumes of M. Comte. We do not affirm that they would certainly change his opinion; but we would strongly advise him to give them a chance.”*

Comte went over this same ground again in his “*Politique Positive*,” and with still greater fullness, and anyone who has read the first essay will be astonished to note the sustained originality and wealth of ideas that characterize the second. It may surprise some of the adherents of the so-called “German historical school of political economy” to be told that Comte comes much nearer to being entitled to the name of founder of that school than any German, and that this is not the claim of any of Comte’s followers, but the repeated acknowledgment of many of the leading spirits of that school in Germany, such as Brentano, Knies, Schmoller, Schulze-Gävernitz, and Gustav Cohn. Both Dilthey and Bernheim have also conceded their indebtedness to Comte.

But Professor Giddings is not satisfied with the expression “social dynamics,” and thinks he can improve upon it. Clinging to the etymological meaning of the word, and ignoring the universal tendency of words to specialize in meaning, he claims that all study of forces is necessarily dynamic, whether the forces are producing motion or are in equilibrium. He says:

“Dynamics is coextensive with physics and is not a division of it. It includes all studies of motion and of resistance. Statics is a division of dynamics and is not co-ordinate with it. . . . The other division of dynamics is kinetics. . . . If then, we must have two divisions of social physics, we should designate them by terms that have some justification in sense and usage. We should not say ‘social dynamics’ when we mean social kinetics.”†

As if startled by the erudition displayed in the above, he appends a foot-note explaining that “this discrimination is not merely formal and pedantic.” It is scarcely pedantic. It is *Pickwickian*. The literal meaning of a word is not the only justification for its use. It is far more important to consider its application. The difference between kinetics and dynamics is a difference of application. It is similar to the difference between *motion* and *movement*. Doubtless they are partial synonyms,

* “The Positive Philosophy of Auguste Comte.” By John Stuart Mill. *Westminster Review*, Vol. lxxxiii (New Series, Vol. xxvii), April 1, 1865, pp. 396-397.—“Auguste Comte and Positivism.” By John Stuart Mill, London, Trübner & Co., 1865, p. 106. (The second edition of this work, 1866, the third edition, 1882, and the American edition, J. Lippincott & Co., Philadelphia, 1866, are all printed from the same plates except the title page.)

† P. 58.

but they have different uses. History and sociology do not deal with social motions but with social movements. The former could scarcely be used except in a humorous sense. One might conceive of a case of "social kinetics," as, for example, the Army of the Potomac after the first battle of Bull Run! Certainly kinetics is used in physics in a very different sense from dynamics, although both always imply motion. The opposite of kinetic is not static but potential. The latter also might be applied to society, according to the definition given by the boy in the physical class, who said that kinetic energy was the power of doing work, and potential energy the power of doing without work; a condition somewhat too common in society! I am sorry that it is not possible to treat this subject seriously.

The discovery which Professor Giddings feels that he has made in announcing that statics as well as dynamics has something to do with force is worthy of being further traced. It is an accepted truth that all discoveries are reached by a series of antecedent steps leading up to them, and perhaps the trail of this one may be found. This part of the book consists in part of a criticism of a certain article in the *Political Science Quarterly* for June, 1895, in which the objectionable use of the words static and dynamic was made that is here condemned. On page 219 of that same article the following sentence occurs: "Dynamic as well as static sociology deals with the social forces, *i. e.*, with social wants." It is just possible that in reading this sentence the truth may have first dawned upon him. It had of course been repeatedly stated before by the same writer, but was considered too elementary to require special treatment.

Neither was it to be expected that Professor Giddings would understand what was meant in that article by "feeling and function." That principle is not so self-evident as the other and needs to be thought out by every one for himself. If there is one principle of sociology that is more fundamental than any other that is the one, and perhaps after all the other sociological elixirs shall have been tested and assigned their true respective values, this one may gain admission to the pharmacopoeia of social science.

It would never do to write a book without including a "classification of the sciences," so Professor Giddings has introduced his. Of course, too, like all the rest, it is the only true one, the others being defective or false. This feature, however, is not new, but has been published several times before during the past two years; it therefore requires no explanation. It need only be said that there are as many ways of classifying the sciences as there are purposes to be subserved thereby, and all of them may be true and useful. The present one doubtless serves some useful purpose in the author's mind. Few others, I imagine, will be able to profit by it. Comte's classification, which, as usual, he

does not understand, is rejected, and Spencer's is criticised, in some points, as I think justly. His own is somewhat ingenious and more complicated than it appears at first sight. The theory is not altogether devoid of merits. If he only could separate the abstract from the concrete sciences the system would be a good one, but this he has utterly failed to do. He calls chemistry a concrete science and physics an abstract science, when the main difference is that the one deals with molecules and the other with masses. Or, if it be said that their material must be distinguished from their dynamic aspects (matter from force), then the answer is that both these aspects equally belong to both. The same is true of every one of his concrete sciences—astronomy, geology, biology, psychology, sociology—each deals with bodies and also with forces. The only economics that can be regarded as abstract is the "mathematical economics" which totally ignores the facts, and which most modern economists eschew. As for ethics, it is not a science at all except in so far as it is not ethics but sociology.* Politics is certainly a department of sociology, but it is not the whole of that department which deals with laws and principles, and it does not deal wholly with these.

There is some truth in the statement that the names of abstract sciences naturally take the termination *ic*, and those of concrete sciences the termination *ology*. This means that when we wish to express the uniform and systematic action of a certain class of forces we select a word with the termination *ic*; and when we wish to refer to the detailed description of a certain group of facts we select a word with the termination *ology*. It all depends upon the point of view from which we are contemplating nature. But, as a matter of fact, every material object has its properties, and these are, in their ultimate analysis, natural forces. If we contemplate the objects as manifesting these forces we have a sort of abstract idea, but if we only contemplate them as stationary and inert, we have the concrete conception. The better terms would therefore be *passive* and *active* sciences, but such terms have not yet been used. Professor Giddings' attempt at a geometrical notation is grotesque. It is wrong side up, to begin with, but it is not of such a character that any curves can be drawn to indicate the respective fields embraced by the sciences. If this could be done it might possess a graphic value.

The fundamental defect of the whole scheme, as already remarked, is the failure to make any clear distinction between concrete and abstract sciences. The more we study the subject the clearer it becomes that there is really only one abstract science, *viz.*, mathematics, and that this is not a science in any such sense as the others, but simply the ideal toward which all aspire. The

* See "The Psychic Factors of Civilization," Chap. XVII; also "Ethical Aspects of Social Science." *International Journal of Ethics*, July, 1896.

degree to which the phenomena of any science are reducible to exact mathematical treatment fixes its place in the scale. This would certainly place solar astronomy at the head, followed by physics and chemistry. Economics and politics are only sub-sciences under sociology. The real and important distinction, however, as already shown, is not between the sciences themselves, but between the aspects from which they are viewed. Each has the two aspects pointed out, the passive or material, and the active or dynamic, and they differ only in the degree to which the latter can be formulated. This dynamic aspect is one for all the sciences, and to call it mathematics is too broad. As it relates to force, it might be called dynamics, but that term, as we have seen, is ambiguous. It could be called physics, but that name must also stand for one of the concrete sciences. There is an intermediate term which is not open to any of these objections and which seems in other respects to be better than any of those suggested. This term is *mechanics*. Mechanics is the branch of pure mathematics which deals with force both in its dynamic and its static relations. This may be regarded as the aspect from which to view all the sciences when contemplating properties, activities, and forces generally. It is also as good a criterion of their exactness as mathematics in the broader sense. It is that part of mathematics that is referred to in making the test of exactness. Every science must have its mechanical aspect. If it has not reached the stage at which this can be said, it is not yet a fully developed science. Mathematical astronomy is astronomical mechanics (*mécanique céleste*). Physics is mainly applied mechanics, and chemistry is molecular physics. Dynamic geology is geological mechanics. Mechanical theories in biology are latterly becoming very common and attracting wide attention. Psychophysics is the mechanics of psychology, but there is a broader "dynamics of mind,"* which I call *psychics*.† Dynamic sociology is not quite all of social mechanics. I have endeavored to indicate its whole scope in a lecture that I have several times delivered and hope soon to publish.‡

Before leaving this subject of the classification of the sciences, it may not be out of place to call the reader's attention to a comparison which I have lately instituted between the systems of Comte and Spencer,§ based on a recent communication from the latter in which his system is more clearly stated than in any of his works. In the paper presented to the Philosophical Society of Washington, of which only a brief abstract was published, I ventured to suggest an arrangement of the sciences in the order of

* "The Psychic Factors of Civilization," Chap. XV.

† Ibid., pp. 56, 129.

‡ It is entitled "The Mechanics of Society," and will be the eighth of the series of papers now running through the *American Journal of Sociology*.

§ See *Science*, New Series, Vol. iii, New York, Feb. 21, 1896, pp. 292-294.

their degree of exactness, *i. e.*, of the extent to which their laws are capable of being formulated in mechanical terms, giving to the names a uniform termination derived from the Greek νόμος, law, of which *astronomy* already furnishes an example. This terminology has been introduced at the beginning of my paper on the Social Forces,* merely as a suggestion. I would not attribute any special importance to it, but it does no harm to propose all possible aids to the solution of so vast a problem as the true order of the universe, and Professor Giddings' effort in this line is, from this point of view, wholly commendable.

I have, at the outset, explained my intentional omission to treat the body of Professor Giddings' book in this article. The headings of the chapters sufficiently indicate their nature, and I have already recorded my admiration for the able manner in which the work is done. The arrangement, terminology and classification of the subject-matter are not objectionable, and were needed to furnish a plan and method of treatment. The chapters on the "Social Composition" and the "Social Constitution" are interesting, and the distinction is fairly drawn. The several steps in association—zoogenic, anthropogenic, ethnogenic and demogenic—had struck me favorably when first sketched out by him in his "Theory of Sociology" in 1894. Book IV is not strong, and several of its weaknesses have already been considered. Space forbids further enlargement. Notwithstanding a manifest effort to be original, there is very little in the book that is truly original. I mean to say that it makes no original contribution to science, no fresh inroad into the unknown, no deeper foundations of the known. On nearly all the living questions, the author is to be found on the traditional side. For example, he goes with Aristotle, Comte, and, indeed, most writers on social questions, in regarding man as naturally a social being,† and he even declares that "the ape-like ancestor of man also must have been a social animal."‡ It is true that this is almost quoted from Darwin, who, however, adds: "but this is not of much importance for us."§ The question is what constitutes a "social animal." If apes are social animals then there are scarcely any others. It is at least false to say that "human nature is the preëminently social nature."¶ The proposition would be more correct if reversed, and "unsocial," or "anti-social" were put for "social."||

Dr. Patten's "Theory of Social Forces" was received too late to be treated except in foot-notes, but Professor Giddings seems to me to have failed to grasp the import of the "pain economy and

* *American Journal of Sociology*, Vol. ii, Chicago, July, 1896.

† See pp. 225, 421-422.

‡ P. 208.

§ "Descent of Man," American edition, 1871, Vol. i, p. 81; see also p. 155. (Professor Giddings' reference is incomplete and seems to be erroneous.)

¶ P. 225.

|| *American Journal of Sociology*, Vol. i, January, 1896, pp. 432-433.

pleasure economy" set forth in that essay. At least, he does not read into it the swarm of ideas that the terms give rise to in my own mind, whether they were in the writer's mind or not. The common-place economic terms which he would substitute* indicate that those of Dr. Patten did not arouse any such train of thought in our author's mind.

Although the treatment of "zoögenic association" is excellent, due to a certain genius of the author for marshaling facts, still, wherever he ventures into biology on his own account he displays the usual incapacity of political economists to deal with biological subjects. It certainly will be refreshing to biologists to learn that "'biology' had no vogue until Mr. Spencer took it up."† This, however, is in keeping with his Spencer-worship in general.

It is so fashionable in these days to talk about "natural selection" that we are not surprised to find the term applied to man in a way that is wholly unwarranted. For example, to say that "in the United States natural selection is rapidly producing new types of men and women from almost every European nationality."‡ All in three or four generations! He does not mean natural selection, that is all. But listen to this: "Natural rights are socially necessary norms of right, enforced by natural selection in the sphere of social relations."§ If it can be shown that a natural right is a character whose partial absence has the effect of diminishing the chances of survival to the age of reproduction or of causing a smaller number of progeny to be produced, and if this disadvantageous condition can be supposed to go on through a sufficient number of generations to tell against those possessing the defect, then, and only in this way, can natural selection have anything to do with it.

The anthropological part of the book is much better, in fact it is the ablest department of the work. The greater part of the work is anthropological, but I refer now more especially to the two chapters on anthropogenic and ethnogenic association, which together constitute a magnificent compilation. It cannot be denied either that, although it is to these aspects that most of the so-called sociology is confined, still this remains the most essential preparation for the science of sociology. True, there was nothing to do but go again over the ground so well tilled by Tylor, Spencer, Maine, and Morgan, but I confess that much new light has here been shed on the great problems dealt with by these writers. The subject has been somewhat Americanized, but there is room for further work in this direction. The important contributions of Schoolcraft, Powell, Mallery, Yarrow, Cushing, and many others, contained in the Smithsonian publications and the reports of the Bureau of Ethnology, have been almost totally neglected, and yet they constitute about the only trained expert work that has ever been done in anthropology. To study these

* P. 406.

† P. 32.

‡ P. 91.

§ P. 418.

sources would be better than to thresh the old straw contained in books of travel of untrained observers which are written to sell. Spencer's "Descriptive Sociology" is chiefly derived from these latter, and all its statements have to be taken *cum grano salis*. His so-called "Principles of Sociology" are compiled from the other, and, even as checked by Tylor's splendid achievements, suffer from the same disease. It goes without saying that Giddings' work shares this defect. Still, in the main, the philosophy thus brought out is sound, and even the repetition of the well-worn facts that underlie the true origin of religious beliefs* may be justified in a work of this character.

The brief reference made by Professor Giddings† to the views of Darwin and Fiske relative to the causes and effects of the erect posture in man, upon which he has enlarged in his article on Sociology in Johnson's "Universal Cyclopedia," is disappointing. Scientific men do not read cyclopedias. It should have been even further expanded here. He expresses surprise at the similarity between his theories and those advanced in the *American Anthropologist*‡ of almost even date, with his cyclopedia article. This is another of the many proofs that he is wholly unacquainted with the work entitled, "Dynamic Sociology," the sixth chapter of which is devoted to a discussion of these same principles, and where they are treated much more fully than in the article referred to. In fact, the whole subject was gone over by the same writer three years earlier in a paper read before the Anthropological Society of Washington on April 20, 1880, and published by the society.§

With the chapter on demogenic association the reader finds himself for the first time out of anthropology, but sixty pages in a work of nearly five hundred, is surely inadequate to the treatment of even the purely statical aspects of the whole science of sociology, and one is still more disappointed in the quality of the treatment than in its quantity. He alludes briefly to Comte's famous "three stages," the notion of which he seems to have derived through Spencer's inverted spy-glass, and which he consequently regards as characterized by "superficiality,"¶ and yet a few pages further on|| he puts forth a theory, ostensibly his own, which scarcely differs except in the choice of terms from Comte's, and which he declares to be "the complete philosophy of history"! He thereupon concludes that "the stages of civilization accordingly are: the military and religious; the

* Pp. 247 ff. Perhaps the last previous plagiarism of this class is contained in the *Forum* for September, 1889 (Vol. viii, pp. 98-107).

† P. 229.

‡ "Relation of Sociology to Anthropology." *American Anthropologist*, Vol. viii, Washington, July, 1895, pp. 241-256.

§ "Pre-social Man." Abstract of Transactions of the Anthropological Society of Washington for 1880 and 1881. Washington, 1881, pp. 68-71.

¶ P. 304.

|| P. 308.

liberal-legal; and the economic and ethical."* These seem to be drawn up for no other purpose than to propose something different from what had been previously proposed—a clear case of mimophobia.

On a number of points, however, all will, I think, agree with him, as, for instance, that there can be no such thing as an exclusively military society,† that the lower outlying races are really inferior to the European race, and not merely the unfortunate victims of a cruel environment,‡ that a form of true savagery exists in the midst of civilization,§ and that the much decried influx of the rural population into cities has a rational basis and is not an unmixed evil.¶ Going outside of the particular chapter here under consideration, there are many other points deserving attention, but which cannot be discussed for want of space, but I would like to set the seal of approval upon what is said about the negro not representing an especially low type of mankind,|| about the density of population as a factor in civilization,** and about the real advantages of the division of labor.†† I would also specially commend the philosophical conclusions reached on the vexed question of incest and exogamy,‡‡ but here, I think, we actually have a partially biological question, and that, although he fails to do so, we must call in the law of natural selection to explain the earliest stages.

On the other hand, there are many statements in the book besides the ones specially selected for discussion in this article, which might be successfully combated, a bare mention of a few of which will have to suffice. Such are the popular but exploded idea that a cold climate is favorable to the development of social energy,§§ that criminals represent a degenerate instead of an undeveloped type,¶¶ that intellectual development is the effect instead of the cause of association,||| and that Malthusianism, even as modified by him, is in any proper sense a sociological, as distinguished from a biological principle.*** But there must be an end to these enumerations.

Most students of society will doubtless agree with him in accepting Mackenzie's three main factors of civilization: "(1) the subjugation of nature, (2) the perfection of social machinery, and (3) personal development," as also that "true progress must include them all;"††† yea, and much more.

The final judgment, then, which it seems necessary to pass upon this work, is that, while excellent so far as it goes, it is not a treatise on the "principles of sociology," or, except to a limited extent, on sociology at all in the proper sense, but that it deals in the main only with the elements or rudiments, coming under

* P. 309. † P. 305. ‡ P. 328. § P. 351. ¶ Pp. 343-347.
 || Pp. 235, 238. ** P. 367. †† P. 397. ‡‡ Pp. 96, 267, 271.
 §§ P. 88. ¶¶ Pp. 72, 127. ||| P. 132. *** P. 336.
 ††† P. 356.

the head of what I have called the "data of sociology." * It is therefore merely preparatory to the study of the science itself, and what I have said relative to sociology as a properly university or postgraduate study does not apply to it. The bulk of it is well adapted to undergraduate teaching.

July, 1896—Ætat. 55.

413. The Social Forces. Contributions to Social Philosophy, VII

History.—Written July 4-10, 1895. Delivered November 5, at Hartford. It was considerably remodeled December 1-5, and again revised on March 22, 1896, before it was sent to press. Proof was not received till June 22. The number containing it reached me July 10, and my reprints August 24.

This article forms Chapter VII of the *Outlines of Sociology*, and is therefore excluded from the present work.

The American Journal of Sociology, Chicago, Vol. II, No. 1, July, 1896, pp. 82-95; Outlines of Sociology, Chapter VII, pp. 139-159.

* *American Journal of Sociology*, May, 1896, pp. 738-752.

July 16, 1896—Ætat. 55.

414. Review of "The Life and Letters of George John Romanes, M.A., LL.D., F.R.S." Written and edited by his wife. Cloth, 360 pages, \$4.00. New York: Longmans, Green & Co.

History.—Written April 29–30, 1896.

Public Opinion, New York, Vol. XXI, No. 3, July 16, 1896, p. 88.

IT would be well if there were no worse fashions or fads than the one now current of publishing the biographies of eminent persons in the form of letters written by them and collected by some near relative and strung together on a bare thread of explanatory text. We should certainly be sorry to give up the delightful collection of George Eliot's letters compiled by Mr. Cross, or the splendid array of Darwin's that his son Francis got together. Yet in these cases, although it would have unduly swelled the volumes to publish the whole correspondence, still, the reader cannot help tiring a little in reading letter after letter by only one of the parties to such a correspondence.

Mrs. Romanes, in this work, has made a new departure in this respect and published the letters received as well as those sent, greatly to the advantage of the reader and of the work. Of course the case is different from those above referred to. There the subject of the biography was the commanding figure, and the correspondence was chiefly with persons of far less eminence. But Romanes rose, as it were, in the midst of giants, and while some think that he became a sort of giant himself before the close of his career, still during by far the greater part of it he was in correspondence with men to whom he looked up as to his masters, and who generously encouraged the young aspirant to push on in his work. Hence it is their letters much more than Romanes's that interest the reader. For example, he was in correspondence

with Darwin himself for many years, and down to nearly the time of his death, and no less than twenty-five of Darwin's letters are here published for the first time. Francis Darwin introduced only four of his father's letters to Romanes, two of which occur in both biographies. The remainder are new to literature, and many of them are very interesting. Among the other great personages in England from whom letters to Romanes are published in this book may be mentioned Gladstone, Huxley, Henslow, and Burdon Sanderson, and he had considerable correspondence with our own Dr. Asa Gray. He also received letters from Prof. Joseph Le Conte.

Romanes was born at Kingston, Canada, in 1848, but his parents soon after went to England, and his whole life is associated with scenes of that country. He was taken to the Continent in his youth, too early to have this make any lasting impression on his mind. He took a university course at Cambridge, 1867-1873, and developed a marked talent for natural history. His investigations into the structure of the *Medusæ* are well known. He married in 1879 and resided in London from that date on, during the greater part of his life, having a summer residence at Geanies in Scotland. In 1889, his health beginning to fail, he removed to Oxford, hoping to be benefited by the change, but, although he there led a very active intellectual life for nearly five years, he slowly declined, and died on May 23, 1894.

Dr. Romanes seems to have possessed sufficient means to enable him to pursue his favorite studies. He is best known for his experiments on animals, and his most important work is that on "Animal Intelligence." He reached a number of valuable conclusions relative to the deeper biological problems, his doctrine of "physiological selection" being the one upon which he himself at least laid the most emphasis. When the Neo-Darwinian school took shape and Weismann's ideas took English biologists by storm, Romanes plunged deep into the controversy, but he was eclectic, and upon the whole opposed to the extreme conclusions of that school. His latest works, especially his "Darwin and After Darwin," some parts of which were published posthumously were mainly devoted to this new phase of biological philosophy. Romanes had a deeply religious nature, and science did not carry him so far as it did men of the type of Huxley. He opposed what he called the materialistic tendencies of science, and elaborated a sort of compromise philosophy of his own, which is not destined to add greatly to his fame. The many letters published in this volume bring out all these aspects of his life, mind, and character, as nothing else could do. The book is splendidly made, printed on very heavy paper in large, clear type, and contains as its frontispiece a good portrait of Romanes.

August 30, 1896—Ætat. 55.

415. Review of an Examination of Weismannism. By George John Romanes, M.A., LL.D., F.R.S. Chicago: The Open Court Publishing Co. Religion of Science Library, No. 18, March, 1896

History.—Written May 10, 1896.

Ibid., No. 8, August 30, 1896, p. 248.

August 31, 1896—Ætat. 55.

416. [Notice of Professor Giddings's Principles of Sociology]

History.—Written July 15–17, 1896. Dr. W. J. Youmans wrote me on July 7, that he would like a “notice” of 1,500 words of Professor Giddings's *Principles of Sociology* for the department of “Special Books” recently introduced into *Appletons' Popular Science Monthly*. As I was filled, in fact, cloyed, with the subject, it was little trouble to write it, and I did it at two sittings. It is, however, wholly different from both the reviews I had written (see *supra*, Nos. 407, 412), and takes up several left-over, though not the less important aspects of the book.

Appletons' Popular Science Monthly, New York, Vol. XLIX, No. 5, September, 1896, pp. 703–705.

PROF. GIDDINGS'S *Principles of Sociology** is a very opportune book. A disposition has been manifesting itself for several years to call almost everything sociology. Most of the popular journals now have a department of sociology, into which they put everything going on in society that does not clearly belong to party politics. All the "advanced" social questions are being discussed under the head of sociology. Especially are so classed the zealous utterances of a large group of well-meaning persons who believe something ought to be done for the less favored members of society. In this class are great numbers of warm-hearted clergymen who think they see in the teachings of the Master a warrant for preaching wholesale social reforms, and this they call "Christian sociology." Add to this the thousand problems of charity, philanthropy, and general social betterment of the condition of the poor, and we have already in the infancy even of the word *sociology* a burden of unscientific and half charlatanic applications of it that threaten to sink it as deeply into obloquy and contempt as a similar procedure sunk that etymologically far better word, *phrenology*, half a century ago.

Of course, Mr. Herbert Spencer's great work, now happily completed, on the Principles of Sociology, not to speak of his Descriptive Sociology, and his other works on that subject, would have sufficed to save it from such a fate, but as it is in America that the tendencies above pointed out are most pronounced, so there was needed in America a standard work that should teach, so far as known, what sociology is, and serve in some degree to stem the tide of degeneration. Prof. Giddings's book to a considerable extent supplies this need. Those who, in the main justly, complain that it ignores all questions of social progress, that it treats wholly of what *is*, and not at all of what *ought to be*, should not forget the peculiar conditions under which it was written, as briefly described above. Whether Prof. Giddings believes in the possibility of a dynamic science of society or not, he was fully justified, in view of the circumstances, in confining himself strictly, as he has done, to the statical and historical aspects of sociology. Moreover, there was the less need of departing from this line, as there is in this country a school of dynamic sociologists, no more sanguine than he of immediate reforms, but working along the lines of social mechanics, to whom that aspect of the question may properly be left.

In view of this very youth of the science, and especially of the confusion of ideas as to what sociology means, it will be profitable at the outset to examine Prof. Giddings's definitions. The first is given on pages 5 and 6, where he says: "It is not too much to

* "The Principles of Sociology." By Franklin Henry Giddings, M. A., Professor of Sociology in Columbia University. Pp. xvi + 476, 8vo. New York and London: Macmillan & Co. Price, \$3.

claim that we have now, at length, a sociology, which may be defined as the systematic description and explanation of society viewed as a whole. It is the general science of social phenomena." He recognizes, however, that social phenomena are chiefly distinguished from all other classes by the psychic element that enters into them, and on page 25 he rather sententiously remarks that "psychology is the science of the association of ideas. Sociology is the science of the association of minds." This he qualifies on the next page in the following form: "Psychology thus is the science of the elements and of the genesis of mental phenomena, as determined by physical and organic relations. Sociology is the science of mental phenomena in their higher complications and reactions, and of the constructive evolution of a social medium, through which the adaptations of life and its environment become reciprocal."

One of the most difficult questions has been to distinguish sociology as a science from what have been called the "special social sciences"—i. e., the several groups of phenomena obviously social, which, whatever sociology may be, must stand in some intimate relation to it. On this Prof. Giddings, pages 30, 31, makes the following observations:

"Clear thinking and a discriminating use of terms will create order from the confusion and will establish sociology in its rightful place, where it can no longer encroach on the territory of other sciences or be crowded out of the field by them. Sociology is a general social science, but a general science is not necessarily a group of sciences. No doubt the word will continue to be used as a short term for the social sciences taken collectively. . . . By methods of sound logic, and with guidance from the history of other sciences, sociology can be definitely marked off from the special social sciences." And on page 33 he adds: "Therefore, while sociology in the broadest sense of the word is the comprehensive science of society, coextensive with the entire field of the special social sciences, in a narrower sense and for purposes of university study and of general exposition it may be defined as the science of social elements and first principles."

Finally, on page 419, he gives the following definition:

"Sociology is an interpretation of social phenomena in terms of psychical, organic adjustment, natural selection, and the conservation of energy. . . . It is strictly an explanatory science, fortifying induction by deduction, and referring effects to veritable causes."

Although these various definitions are somewhat bewildering if not inconsistent, they do nevertheless afford some idea of what sociology is, and it is clear that they give no countenance to the practice of making it a general receptacle for all sorts of reform programmes and theories of social regeneration. In fact, with Prof. Giddings, as with Spencer, sociology is the study of society

as it is and as it has been; also, perhaps, so far as a knowledge of its laws render prediction possible, as it is likely to be in the future; but not at all a study of what it ought to be, much less an attempt to lay down rules for its improvement.

Although Prof. Giddings has followed Spencer very closely in his general ideas of sociology, still he thinks he has discovered one very fundamental principle that is entirely new, and upon which he attempts to build the entire science. This principle he calls the "consciousness of kind"—i. e., the fact that men recognize their like, and that this natural affinity makes it possible for them to crystallize into social groups. Of course, he finds the principle running down through the entire animal series, and he commits the fallacy of regarding this as the highest proof of its sociological importance. In fact, he has seized upon a well-known and important biological principle, and, as may be done with so many others, he has successfully applied it in various departments of social life. It has doubtless helped him in dealing with the difficult question of the origin of human association, to which he has given special attention.

The work is divided into four books, the first of which deals with the theory, the second with the structure, the third with the evolution, and the fourth with the causes of society. Space will only permit a brief reference to Book III, on the Historical Evolution of Society, which is not only the most important department of the work, but is the most ably treated. The general subdivision was briefly outlined in an earlier paper on the Theory of Sociology. It is into zoögenic, anthropogenic, ethnogenic, and demogenic association, to each of which a chapter is devoted. The treatment of zoögenic association is too brief, but if properly expanded it would form an important introduction. To the two chapters on anthropogenic and ethnogenic association too great praise can not be bestowed. Although somewhat trite subjects after all that has been written by Tylor, Spencer, Morgan, McLennan, and the rest, Prof. Giddings has succeeded in so organizing, methodizing, and condensing this immense mass of data as to render it not merely interesting and instructive, but even fascinating, and to enable the reader to acquire in small compass practically all of importance that is contained in so many large volumes.

The chapter on Demogenic Association, which in a work on sociology should have been the *pièce de résistance*, is less ably written and should have been expanded and improved. But the reader will see for himself what its defects are, and will be able to a great extent to supply them. This department of the work, however, taken as a whole, possesses exceptional merit.

It will be charitable to the author to refrain from discussing Book IV, on Social Process, Law, and Cause. Much of it is an

attempt to apply Spencer's First Principles to social phenomena, in which the author is generally unsuccessful. There are, however, some very good suggestions under the head of Social Choices which we can commend to the reader.

September (?), 1896—Ætat. 55.

417. [Voluntary Organization]

History.—Written December 24, 1895. On October 29, 1895, Professor J. W. Jenks, Secretary of the American Economic Association, wrote me a long letter about the forthcoming meeting, and said there would be a "symposium" on the *Sphere of Voluntary Organization in Social Movements*, in which he would like to have me take part, and read a paper to occupy 15 minutes. On December 11, I received a program in which I was scheduled for such a paper, which I probably had consented to communicate. On December 24, I wrote out a ten minute speech, which I took with me to the meeting. On December 30, I gave a copy of this paper to Professor Jenks to furnish to the press, and it appeared in two Indianapolis papers, as stated under another head (*supra*, No. 395). The paper was read on December 31, as part of the "symposium." As the time approached I felt the need of a preliminary remark in the form of a sort of apology for discussing such an apparently commonplace subject, and I jotted down such a remark, which I read by way of introduction. As this did not get printed anywhere, I introduce it here. The special reason for doing so will appear a little later. It was as follows:

The most difficult class of phenomena to study in their causes and fundamental relations are those which are constantly before us. Familiarity with them leads to the assumption that it is somehow "natural" that they should be as they are, just as it was once supposed that an apple would fall to the ground because it was natural for it to do so, although in so simple a phenomenon there is involved the most important law of the universe.

The phenomenon of voluntary organization in society is apt to be looked at in this way and is much neglected on that account.

The paper, as I had written it in Washington followed this, and then came the longer papers of Professor Henderson, Dr.

Lindsay, and the Hon. W. D. Foulke. It then took the form of a discussion, in which I participated, followed by Dr. Lindsay, Professor Mayo-Smith, Dr. E. V. Robinson, Dr. Patten, and Dr. Small. These speakers all addressed themselves to my paper rather than to the others that had been read. I will comment here only on one point made by Dr. Small, because it relates to the preliminary remark which I made, and seems irrelevant as it stands in the *Proceedings* (p. 159) because that remark does not occur there. He characterized the idea embodied in that remark as "the mystery of the familiar," and says:

"One of the things which the sociologists are trying to emphasize is just this, that the things with which we think we are most familiar are most mysterious to us, and that we need to get to work and observe them and classify and organize our knowledge with respect to them."

On February 1, 1896, Professor Jenks sent me a report of all my remarks at that meeting including the stenographer's report, for me to edit and adapt to the *Hand-Book* which he was preparing. He said he was limited for space, and indicated the maximum number of words which could be allotted to my paper and remarks. This compelled me to omit my preliminary remark, as I had no idea that any of the speakers would refer to that, and also the last paragraph of the original paper relating to the "cosmical" character of the phenomena. But Dr. Small also dwelt on that, so that all he said about my part in the proceedings was omitted in the final publication. Fortunately the Indianapolis newspapers printed my paper in full, but the preliminary remark was not written until near the time I was called upon to read my paper. The *Hand-book* was in my mail when I returned from the West on October 24, 1896. It probably came out in September.

Hand-Book of the American Economic Association, 1896, together with Report of the Eighth Annual Meeting, Indianapolis, December 27-31, 1895. Supplement to Economic Studies, New York, Vol. I, No. 1, April, 1896, pp. 141-143; 153-154.

ALL social organizations may be regarded as voluntary except three, namely: (1) society itself, (2) the family, and (3) the state. Society, in its simplest and purest form, is a collective state in which individuals are moved to action by common sentiments, and kept together by unconscious psychic bonds similar to those that control gregarious animals.

The family is a state which cannot be called voluntary, because some, if not a majority, of its members, have not reached the age of judgment and choice. It might have been placed first, because, in one form or another, it undoubtedly constituted both the basis of society and the state. Finally, the state must be excluded from the list of voluntary organizations, because membership in it is compulsory. Every individual must belong to some national autonomy, and if he voluntarily quits one country, he continues to owe allegiance to it until he transfers his allegiance to another. Excluding these three social organizations, we are obliged to class all others as voluntary, and the field is thus cleared for their consideration. They are so numerous and varied that it would be hopeless to attempt to describe or even to enumerate them. Different speakers will treat them from different points of view. I will confine myself to a very general discussion of their philosophic significance from the standpoint of social economy and sociology.

Looking at the question thus fundamentally, it may be remarked at the outset that voluntary social organization is essentially rational, and is thus distinguished from the three forms of involuntary organization, which are, the first and second wholly, and the third mainly, unconscious. While these latter are products of environmental conditions, and genetically or spontaneously evolved, the former are products of rational calculation, and are intentionally or designedly created.

While the specific or avowed objects of voluntary organization are manifold and varied, there is one general object not avowed and rarely recognized. This general or fundamental object is the attainment of greater social efficiency. This constitutes one of the chief methods of social progress. Individuals also contribute to social progress, even when working through no organization, but neither the individual working alone nor the organized body aims at this result. The individual seeks only his own interests, and the voluntary association seeks only the specific objects set forth in the constitution of the association. But usually both do contribute to the general advancement of the collective interests of society. This aspect of voluntary organization is as wholly unconscious as the family, the social state, or the political state. To this extent the general laws of social development are as much in operation in the rational coöperation of men as in the blind workings of psychic influences that produce family, social, and political groups.

We may next inquire as to the manner in which voluntary organization contributes to the increase of social efficiency. While still adhering to the broader view, it may be shown that the well-known principles of organization in general for the purpose of producing a greater effect for the same expenditure of energy, apply to social organization. This statement in and of

itself is of course a truism, but taken in connection with a long series of antecedent steps leading up to it, its significance is important, nor is it so apparent as might be supposed when we remember that by efficiency is not meant the mere accomplishment of the specific object for which voluntary organizations are formed, but the attainment of those unconscious and unintended social ends which are only contemplated in the general scheme of social development.

The discussion has, as I expected, brought out many points which I would have been very glad to consider if I had had time to work them into my paper. I will just glance at the objection made by Professor Lindsay, that there are other involuntary organizations than those which I mentioned. First, as to the church which sometimes punishes its members, I should say that where the church really assumes such powers it is more properly, a part of the government; it assumes gubernatorial powers. In the second place, when children are baptized in the church under the age of judgment, it then performs the part of the family. However, I am prepared to admit that the church might be regarded as in some respects an involuntary organization. I believe the suggestion was made that political parties may also be so regarded. Membership of political parties is a very vague thing, and it would seem that some people were born to their political party. But there is this difference in both these cases, the church and political parties: one can leave the church without going into another church; and one can leave his political party.

An important point was brought out on the other side of the question, viz., that the state itself may, in a certain sense, be regarded as a voluntary organization. I have maintained that the state is at bottom the result of the recognition of its advantages; and there is one pretty crucial proof that the state would be organized if there were excluded all considerations of power and emolument. Vigilance committees, such as we have had in our western territories, are simply cases of incipient government, originating from the determination on the part of the adult and intelligent portion of society that crimes and outrages committed by desperadoes beyond the reach of the law, cannot be allowed.

It therefore seems that government would originate itself at least, for its own protection, because such vigilance committees are not actuated by either love of power or hope of emolument.

One important point was touched by the last speaker, which, if there were time, I should be very glad to try to meet, and that is with regard to the extension of the state functions. Now I think there is a prevalent misconception as to what is involved in the modern demand for the extension of state action. The only thing we have with which to compare it is the old autocracy of past times but to my mind, it is as far from that as night is from day,

and I believe it is to be contrasted, instead of compared with it. We are tending towards larger state functions but not towards autocracy. We are moving away from autocracy and despotism and everything of that kind. The goal toward which we are moving, instead of autocracy, I would call sociocracy, which is simply society taking its affairs into its own hands.

September, 1896—Ætat. 55.

418. The Mechanics of Society. Contributions to Social Philosophy, VIII

History.—Written March 26, to April 2, 1896. I gave two public lectures at Columbian (now George Washington) University in March, 1896. One of these I called: *Society in its Genesis*, and the other *The Dynamics of Society*. They were both delivered from slip notes, the first on March 6, the second on March 13. On March 19, I received a letter from Professor Sidney Sherwood of Johns Hopkins University inviting me to give a lecture there on April 10. I had offered to do this in the course of our interviews at Indianapolis in December. I sent him the title as *The Mechanics of Society*, which he accepted on April 26, and I commenced at once to write out my Columbian University lecture. It was finished and delivered on the day fixed. Professor Sherwood was well pleased. He had asked me if I would give a course of lectures there on sociology, and I had expressed a willingness to do so, but the next day he introduced me to Professor Herbert B. Adams and broached the subject to him. He received me very coldly and gave Professor Sherwood no encouragement. He informed me later that the authorities of Johns Hopkins had wholly rejected the proposition to recognize sociology as a part of the curriculum.

I revised my lecture and decided to make it the eighth of the series of *Contributions to Social Philosophy*. The eighth Hartford lecture had been called *The Subjective Trend of Modern Philosophy*, and the greater part of it had been embodied in several papers already written, and either published elsewhere or then seeking a different publisher. I therefore sent this on April 27, to Dr. Small. Proof was received on May 29. I had had some

correspondence with Dr. Small about the words *telic*, *telics*, etc., and I had used the word *telesis* in this article, but had not explained the etymology. I decided to do so in a foot-note appended to the proof, which I held some days for the purpose, and inserted the foot-note. But I could not wait to complete the investigation and contented myself with what appears on page 248. (For the completion of this search see *Outlines of Sociology*, pp. 180-182, and *infra*, No. 452.) The corrected proof was returned June 7. I did not see a second proof, but my additions were correctly printed, and the number containing the article arrived on September 7, my reprints on the 19th.

Except for the matter added to the above-mentioned foot-note, this article is uniform with Chapter VIII of the *Outlines of Sociology*, and need not be repeated here.

The *American Journal of Sociology*, Chicago, Vol. II, No. 2, September, 1896, pp. 234-254; *Outlines of Sociology*, Chapter VIII, pp. 160-190

September 24, 1896—Ætat. 55.

419. Review of Social Rights and Duties. Addresses to Ethical Societies. By Leslie Stephen. In two volumes, 8vo. London: Swan, Sonnenschein & Co.

History.—Written July 14, 1896. I received the volumes in May and glanced through them then, but on July 11, and 12, I gave them a more thorough inspection. Of course I could not systematically read such books.

Public Opinion, New York, Vol. XXI, No. 13, September 24, 1896, p. 439.

November 7, 1896—Ætat. 55.

420. Administrative Report for the year ending June 30, 1895

History—Written July 1-6, 1895. Major Powell's plan of allowing the Heads of Divisions to prepare and publish in the *Annual Reports* an administrative report of the operations of their respective Divisions was changed by his successor, Mr. Charles D. Walcott, and, although such reports were required to be submitted, they were embodied in the report of the Director and put in the third person. Mr. Walcott also practically abolished the Divisions, and made most of the assistant geologists and paleontologists independent heads of "parties." Henceforth I reported on my own personal work only.

Sixteenth Annual Report of the United States Geological Survey, 1894-95, Part I, Washington, 1896, pp. 40-41.

November 7, 1896—Ætat. 55.

421. Some Analogies in the Lower Cretaceous of Europe and America

History.—Written February 1 to June 17, 1895. After several years' study of the American Mesozoic I had become very desirous of seeing the European beds of that age, and my acquaintance with the Lower Cretaceous of this country, and especially with the Potomac Formation, on which I had prepared an extensive monograph (see *supra*, No. 405), made it very important for me to examine the Wealden of England and the Neocomian of the Continent. This desire was my principal motive for visiting Europe in 1894, and, besides being made the

regular delegate of the U. S. Geological Survey to the International Geological Congress held that year in Zürich, I made numerous field excursions to interesting points, some of which are described in this paper.

On January 31, 1895, I commenced making from my notes and the general literature a systematic study of the English Wealden and of the Lower Cretaceous of Europe generally. My first idea was simply to prepare a paper on the subject and lay it before the Geological Society of Washington. On February 1, I commenced dictating the paper to which I then gave the same title which it still bears. But the matter grew under my hands, and I soon saw that the paper would be much too long for the purpose named. I then decided to endeavor to publish it in the *Annual Report* of the U. S. Geological Survey as a sort of sequel to the one on the *Potomac Formation*, which had just gone to press for the *Fifteenth Annual Report*. I therefore on February 11, wrote to the Director making this proposition. He replied on February 13, accepting it as wholly appropriate. I then proceeded to dictate from the wider point of view. I was taken sick with *grippe*, and compelled to give up office work, but I went south and studied the Tuscaloosa formation and cured myself. Returning in April I resumed the dictation on April 12. The manuscript was about completed by the end of May, but long, laborious tables of distribution had to be prepared, and the illustrations must be attended to. Anyone at all acquainted with such work knows how much care and pains it involves. But it was pushed to the finish and was sent to the Editorial Division on June 17.

There was more than the usual promptness in sending this paper to press. Proofs of the illustrations were read in November, but those of the letter-press and the maps did not come till January, 1896. It was all through in February, and I prepared the index slips from the page proofs in early March. They were embodied in the general index to the volume, but I had the entire index stitched in at the end of my reprints, and I received 200 of these in November, at which time also the volume itself appeared. Quite a serious error occurs on the preliminary title page (p. 463), in omitting the letter a from the word *Analogies* ("Anlogies"). This was correct in the manuscript (copy), and in the last proof I saw. Another error occurs in this paper for which I am alone responsible. On p. 477 the word "empeiro-

genic" occurs for "epeirogenic." It was so in my manuscript, but was a pure aberration of mind, as I adopted the word from Dr. C. A. White, and well knew its form and etymology.

I distributed my 200 reprints liberally, sending many through the Bureau of International Exchanges of the Smithsonian Institution to parties whom I had met while in Europe. There were many echoes from it, of which I will mention only a few. Professor Marsh wrote me a complimentary letter, but remained unconvinced. Professor Osborn begged me to send a copy to Professor Poulton of Oxford, which of course I did. Dr. Andrew D. White characterized it as "a most noble contribution to geological science." Mr. E. A. Webb, who accompanied me in my excursion round the Isle of Wight, thanked me for having a species of the fossil wood we collected named for him. Senator Capellini and Count Messi wrote me pleasant letters. I received a long letter from Mr. A. J. Jukes-Browne of the British Geological Survey, whom I did not meet there, calling my attention to his work, which I had overlooked, but agreeing fully with my views. Sir Archibald Geikie, Director of that survey, and of whom I saw much both in England and in Switzerland, acknowledged the omission in his *Geology* pointed out on page 500 of my paper, and promised to supply it in later editions. Sir John Lubbock, whom I met at the Congress in Zürich, wrote me a letter and sent me his new book, *The Scenery of Switzerland*, which was the outcome of his sojourn there that summer. There were also acknowledgments from Albert Gandry, A. de Lapparent H. B. Geinitz, and numerous others. I still possess many reprints of this paper.

This paper is of course excluded from the present work under the rule.

Ibid., pp. 463-542, pl. xcvi-cvii.

November 11, 1896—Ætat. 55.

422. The Purpose of Sociology. Contributions to Social Philosophy, IX

History.—Written September 6–12, 1896. My intention was to adapt my eighth Hartford lecture on *The Subjective Trend of Modern Philosophy*, to this place in the series of *Contributions to Social Philosophy*, but I had used so much of that lecture in other ways that I decided on September 9, to reject all the old matter and make this an entirely new paper. The manuscript was mailed on September 13, and a few days later I left for the field in the West and did not return till near the end of October. I had asked Mrs. Ward to compare the proof carefully with the copy if it came during my absence, which it did, and this was done.

As this article forms Chapter IX of the *Outlines of Sociology* it need not reappear here.

The American Journal of Sociology, Chicago, Vol. II, No. 3, November, 1896, pp. 446–460; *Outlines of Sociology*, Chapter IX, pp. 191–212.

November 11, 1896—Ætat. 55.

423. Review of L'Éthique.—Le Bien et le Mal; Essai sur la Morale considérée Comme Sociologie Première. Par E. de Roberty. Paris, Félix Alcan, Editeur, 1896. Pages xxiv + 237, 8v.

History.—Written September 12–13, 1896. I received the book at the end of May and read it almost immediately, but various duties delayed the review.

The American Journal of Sociology, Chicago, Vol. II, No. 3, November, 1896, pp. 461–464; Reprint, pp. 461–463.

November 20, 1896—Ætat. 53.

424. Age of the Island Series

History.—Written November 7–9, 1896. As Professor Marsh was one of the Editors of *Science*, I suggested to Dr. Cattell that this article should properly be referred to him, but Dr. Cattell said this was not necessary. I received a letter in November from Professor Henry F. Osborn in which he said he was quite with me on the question discussed. There is of course, no longer any question as to the Cretaceous age of the beds that I called “The Island Series.”

Science, New Series, New York, Vol. IV, No. 99, November 20, 1896, pp. 757–760.

December 11, 1896—Ætat. 55.

425. Reconnaissance through the Indian Territory, Oklahoma and Southwestern Kansas

History.—Read November 28 (not 8, as misprinted in *Science*), and written out for the Secretary on November 30. Mr. T. Wayland Vaughan gave his account of the same expedition to the Geological Society of Washington on March 10, 1897, and I made some remarks on that occasion.

Science, New Series, New York, Vol. IV, No. 102, December 11, 1896, pp. 883–884.

January (?), 1897—Ætat. 55.

426. Report on the Department of Fossil Plants in the U. S. National Museum for the year ending June 30, 1894

History.—Prepared by an assistant under my direction and signed by me, but edited into the Director's report.

Annual Report of the Board of Regents of the Smithsonian Institution for the year ending June 30, 1894. Report of the U. S. National Museum, Washington, 1896, pp. 66–67.

January (?), 1897—Ætat. 55.

427. Bibliography for the year ending June 30, 1894

History.—Regularly prepared by myself and furnished for the Director's report.

Ibid., p. 203.

WARD, LESTER F. [Two letters relating to the fossil plant *Winchellia triphylla* Lesq.]

Am. Geologist, XII, October, 1893, pp. 211–213.

These letters were written to Prof. N. H. Winchell, April 12 and May 18, 1893, and were published by him as part of the history of the plant in question, which is described and figured in the same paper, from Professor Lesquereux's original manuscript and drawings.

—— Frost plants.

Science, XXIII, February 2, 1894, p. 66.

A short note on the observation, by Mr. William Hunter, of the frost crystals on *Cunila mariana*, many years prior to that of the writer.

WARD, LESTER F. Fossil cycadean trunks of North America, with a revision of the genus *Cycadeoidea*.

Proc. Biol. Soc. Wash., 1x, April 9, 1894, pp. 75-88.

A brief history of the occurrence of cycadean trunks in North American strata precedes the revision and synonymy of the genus *Cycadeoidea*, to which all the American forms are referred. The revision is chiefly based on the recent studies of Count Solms-Laubach.

— Principes et méthodes d'étude de corrélation géologique au moyen des plantes fossiles.

Compte rendu de la cinquième Session du Congrès Géologique International, Washington, 1891 (1894), pp. 97-109.

This paper was read before the congress as here published, on August 29, 1891. It was published in English in the *American Geologist* for January, 1892.

— The Cretaceous rim of the Black Hills.

Journ. Geol., 11, No. 3, April-May, 1894, pp. 250-266.

Gives the results of a field reconnaissance made in September, 1893, in that part of Fall River County, S. Dak., in which valuable specimens of cycadean trunks had been collected. The stratigraphy was carefully worked out and the horizon determined to be Cretaceous instead of Dakota Group, as had been reported by other geologists.

— Report on the Department of Fossil Plants in the United States National Museum, 1891.

Rep. Smithsonian Inst. (U. S. N. M.), 1891 (1892), pp. 255-257.

January, 1897—Ætat. 55.

428. Social Genesis. Contributions to Social Philosophy, X

History.—The original Hartford lecture entitled *Genetic Progress* was written July 21–25, 1895, and delivered on November 6. The lecture that I gave at Columbian University on March 6, 1896, entitled *Society in its Genesis* (see supra, No. 418), seems to have been quite different from the Hartford lecture, and largely delivered from notes. When I came on November 9, 1896, to prepare the tenth article of this series I found it necessary to rewrite large parts of my Hartford lecture, especially the introductory portion. It was completed on November 11, and mailed on the 12th. Proof was received December 4, and the number containing it reached me January 6, 1897. On the cover of my reprints, which arrived on January 8, occurs the erroneous date December, 1896. It forms Chapter X of the *Outlines of Sociology*.

The American Journal of Sociology, Chicago, Vol. II, No. 4, January, 1897
pp. 532–546; Reprint, pp. 1–15; Outlines of Sociology, Chapter X, pp.
213–233.

February, 1897—Ætat. 55.

429. [The Ruralization of City Populations]

History.—Remarks on the paper of Professor L. H. Bailey entitled: *Is There a Distinct Agricultural Question?* discussed in Professor Bailey's absence on December 29, 1896. At the request of the Secretary I wrote out my remarks on January 17, 1897, to the best of my recollection of them.

Handbook of the American Economic Association, 1897, together with Report of the Ninth Meeting, Johns Hopkins University, December 28–31, 1896. Supplement to Economic Studies, Vol II, No. 1, New York, February, 1897, pp. 57–58.

INVOLVED in the discussion of this paper is the much-deplored fact of the abandonment of farms and the influx of populations into cities. I believe that if Professor Bailey had been present he would have taken the ground that this is by no means an unmixed evil. It is only one side of a two-fold problem which is sociological rather than economic. There is going on a double process which I am in the habit of formulating as, on the one hand, the *ruralization of city populations*, and on the other hand, the *urbanization of country populations*. These two processes are going on simultaneously, and underlying both is the economic principle of the *standard of living*. I have given special attention to the first only of these processes, which is purely sociological; but the second, which is more specially economic, cannot be separated from it. Both are due to the general fact that rural conditions can be appreciated only through culture, while, in the present state of society, culture can be acquired only at centers of population. The modern facilities of transportation and intercommunication are giving rural populations a taste of what culture and a higher intellectual standard of living mean, and they are gravitating cityward in search of it. At the same time the institutions of learning, public lectures, voluntary associations, theaters, and all the agencies of city life that secure mental friction and inspire intellectual, scientific, and artistic development, are producing a distaste for the artificial conventionalities of city life and a yearning for that solid communion with nature which can be realized only by rural life. Of this we are now witnessing the result, but its earlier stages are chiefly those preparatory steps which look to the superficial observer like the abandonment of the country. But the tendency to equilibration is already manifest and it will ultimately be complete.

March, 1897—Ætat. 55.

430. Individual Telesis. Contributions to Social Philosophy, XI

History.—This paper consists mainly of my eleventh Hartford lecture entitled: *Telic Progress*, which was written July 25-29, 1895, and delivered November 7. It then lay undisturbed for more than a year. When, in December, 1896, copy was needed for Number 11 of this series I brought it out and on December 8-13 I remodeled it extensively, changing the title, and sent it to press. Proof reached me January 14, 1897, and it appeared in March. It forms Chapter XI of the *Outlines of Sociology*.

The *American Journal of Sociology*, Chicago, Vol. II, No. 5, March, 1897, pp. 699-717; *Outlines of Sociology*, Chapter XI, pp. 234-261.

March 12, 1897—Ætat. 55.

431. Announcement of Dynamic Sociology, Second Edition

History.—On January 1, 1897, I wrote to the Appletons offering to prepare a circular announcing the second edition which it had been decided to publish, and on January 17, I drew up this circular. I ordered several hundred for my own use. A package of them was received on March 12.

DYNAMIC SOCIOLOGY;

OR,

*Applied Social Science, as based upon Statical Sociology and the
Less Complex Sciences*

BY LESTER F. WARD.

IN TWO VOLUMES. 12MO, CLOTH. PRICE REDUCED TO \$4.00.

SECOND EDITION.

D. APPLETON & COMPANY, PUBLISHERS,

72 FIFTH AVENUE, NEW YORK.

THE appearance of a second edition of this important work will be welcomed by a large class of readers. Of the first edition *Science* concluded an elaborate review in these words: "Ward's 'Dynamic Sociology' is America's greatest contribution to scientific philosophy."

The public press in general, however much it disagreed with his conclusions, bore uniform testimony to the author's great vigor and independence of spirit. It appeared at a time when the science of Sociology was almost unknown, and with the exception of Mr. Spencer's sociological writings it was the first work in the English language that contained the word Sociology in its title.

We would invite special attention to the somewhat elaborate preface which the author has prepared for the new edition. In it he has not only reviewed the phenomenal progress of Sociology during the past fourteen years, but he has also given an extremely interesting history of the book itself, and especially of its reception in Russia. Its liberal doctrines were eagerly indorsed by the advanced minds of that country, and the work was translated into Russian, but the translation was seized by the censors and burned by order of a Council of Ministers. Efforts to translate it into Polish met with nearly the same fate. All this is fully set forth in the preface, together with the opinions of eminent men and of the press of both America and Russia upon the subject. In a letter received at the time by the author from Dr. Albion W. Small, then President of Colby University, now Head Professor of Sociology in the University of Chicago and editor of the *American Journal of Sociology*, published with the permission of the writer in this preface, Dr. Small says: "At last Americans will discover, by the grace of the Russian censor's *auto-da-fé*, that an epoch-making book has been before their eyes since 1883, from

the pen of one of their own countrymen, and only a handful of them have had the wit to discover it."

ORDER BLANK

MESSRS. D. APPLETON & COMPANY,
72 FIFTH AVENUE, NEW YORK.

*Please send us, by*_____

_____ *Copies* DYNAMIC SOCIOLOGY (*second edition*), by
LESTER F. WARD. *Price, \$4.00.*

_____ 1897.

March 12, 1897—Ætāt. 55.

432. Professor Fontaine and Dr. Newberry on the Age of the Potomac Formation

History.—Written December 19–27, 1896. Dr. Newberry's *Flora of the Amboy Clays* emerged from the press about the middle of December, 1896, and I wrote to Dr. Cattell on December 16, that I proposed to review it for *Science*. I must have said in that letter that in doing so I should take occasion to combat the views of Professor Marsh as to the Jurassic age of those beds, for in his reply, dated December 20, desiring me to write the review, he says:

“As far as I understand the matter, there is pretty complete unanimity on the subject with the exception of Professor Marsh. So it seems to me quite proper that you should write the review if you are willing to do so.”

On December 17, I discovered that Professor Fontaine's Bulletin on the *Geology of the Potomac Formation* had also just appeared, and I secured a copy. I was familiar with both these works, having seen them through the press. I said of this latter in my note-book, “I shall review it with Newberry's ‘Flora of the Amboy Clays’ as an answer to Professor Marsh.” I commenced at once to prepare the article, dictating the text and marking the passages in the two books to be copied. The rough draft was completed on December 22, and a duplicate final draft was then made, all of which I still possess. The first impression of the final draft was sent to Dr. Cattell on December 27; he accepted it on January 1, 1897, intimating that there might be some delay in finding room for it. This I expected on account of its length.

Professor Marsh did not reply to my article, but many ex-

pressed their hearty agreement with me. None objected, and Mr. Gilbert wrote an article for *Science*, not pretending to be a judge on the question, but comparing Professor Marsh's logic with that of Newberry and Fontaine. One letter that I received seems to be worth reproducing in full. I have taken the liberty to improve a few pardonable gallicisms, but upon the whole the English is excellent:

PARIS, 14th April, 1897.

DEAR SIR:

I consider it a duty to express to you how willingly I am assenting to your views on the Lower Cretaceous of America. I cannot at all accept the conclusions of Professors Marsh and Marcou. During many years I have studied the Wealden formation of Normandy and of the Boulonnais, where it was quite evident that the Wealden sands and clays were overlying the uppermost Purbeckian, which was separated from the Kimmeridge by the whole thickness of the Portlandian. Therefore it is unintelligible for me that Prof. Marcou has intended [attempted] to make the Wealden an equivalent of the Upper Jurassic. No one among French or English geologists will follow him in that.

I am very glad to see how your works and those of Prof. Fontaine, Hill and others have so clearly established the Lower Cretaceous character of not only the Potomac Formation, but also those strata of Texas, where the marine shells begin to be intermingled with the sediments. It is a great conquest for American geology that the Lower Cretaceous can be now so fully recognized in the direction towards Mexico, where the whole formation appears to be represented by a large mass of limestones, the fossils of which range from the Lower Neocomian to the top of the Albian.

When in a few years a fourth edition of my Text-book will be published, it will be for me a great pleasure to make use of all that has been recently published by you on that question.

Yours truly,

PROF. A. DE LAPPARENT.

When, several years later, I was working so long on the cycad collections in the Yale Museum, Professor Marsh begged me to look at the collections of bones made by Hatcher in the Potomac formation of Maryland, which he had placed side by side with those from the typical Jurassic of Wyoming, and I did so. He claimed that this comparison was a complete demonstration of the Jurassic age of the Potomac. I was not of course any judge of vertebrate fossils, and might form a wholly erroneous opinion, but singularly, where he saw resemblances I could see only differences, and I was particularly struck by the diminutive size of the Potomac specimens, even when they seemed to have about the

same form as those from Wyoming. It seemed to be a small degenerate race of animals of about the same type. That certainly ought to mean something, and it may mean that in the long interval that separates the Jurassic from the Lower Cretaceous the mighty reptilian fauna that dominated the earlier period, and, as we know, ultimately became extinct, had degenerated into the dwarf, depauperate fauna that survived into the Cretaceous. I think, however, that it is better explained on the theory of sympodial development as a case of the "persistence of unspecialized types."

Science, New Series, New York, Vol. V, No. 115, March 12, 1897, pp. 411-423.

March 13, 1897—Ætat. 55.

433. Descriptions of the Species of Cycadeoidea, or Fossil Cycadean Trunks, thus far discovered in the Iron Ore Belt, Potomac Formation, of Maryland*

History.—Written February 4–16, 1897. A paper of this description could not be dictated nor written off-hand. I used pads of paper and wrote in pencil direct from the specimens as I studied them the descriptions of each specimen. Then I combined these for each species and wrote the description of the species. I adopted a regular order for the characters, and had a schedule of characters by me so that I could not overlook any. The synonymy was also painstaking work, necessitating the handling of many books, and that too was first written out in pencil. When all was ready and carefully verified it was turned over to the typist and copied in duplicate on the typewriter. My pencil manuscript and both copies are still in my possession. The full description of the genus Cycadeoidea was here made once for all.

The paper was read before the Biological Society of Washington on February 27, under the title: *Description of Seven Species of Cycadeoidea from the Iron Ore Deposits of Maryland*. Of course I did not read the descriptions to the Society, but gave a general account of the work undertaken. Many photographs had been made of these trunks, and these were exhibited to the Society. Proof of the article was received on March 8, and it appeared on March 16, but is dated March 13. I distributed reprints, which of course were of interest only to specialists. Senator Capellini was among those who acknowledged them. His interest in cycads has already been mentioned (see *supra*, No. 421).

Proceedings of the Biological Society of Washington, Washington, D. C., Vol. XI, March 13, 1897, pp. 1–17.

* Read before the Biological Society of Washington, February 27, 1897.

May, 1897—Ætat. 55.

434. Collective Telesis. Contributions to Social Philosophy, XII

History.—This is the new title of my twelfth and last Hartford lecture, called *Applied Sociology*, which was written July 29 to August 3, 1895, and delivered November 7, 1895. It was remodeled and largely rewritten February 19–22, 1897, and sent to press on March 14. Proof arrived April 3, the number containing it on May 12, and my reprints on May 14. It forms Chapter XII of the *Outlines of Sociology*, and, like all its predecessors, is excluded from this work under the rule.

I find in the worked-over manuscripts of this article some substitutes for what was actually either said to the class in the lecture or printed in the article. For example, at the end of the paragraph on p. 815 (284 of the *Outlines*), instead of the foot-note referring to Mrs. Stetson's poem *Similar Cases*, I actually introduced the poem with an explanatory remark, and then supplemented it with an effusion of my own. This heretofore unpublished matter may have a certain interest for some readers, and be allowed here as completing the history of this series of papers. The supplementary matter is as follows:

The most telling answer that has ever been made to the class of persons who talk in this way is embodied in a poem by Mrs. Charlotte Perkins Stetson [now Gilman] which went the rounds of the press about two years ago and was read by nearly everybody in this country. Notwithstanding this, it possesses such permanent merit that it would be worthy of reproduction in any standard work. This sterling merit is not in the least diminished by the happy vein of humor that pervades it and acts rather as a spice to the really solid diet that is offered by this feast. The poem is entitled: *Similar Cases*, and is as follows:

SIMILAR CASES.

"YOU MUST ALTER HUMAN NATURE!"

BY CHARLOTTE PERKINS STETSON.

(Respectfully dedicated to Gen. Walker, Mr. N. P. Gilman, etc.)

I.

THERE was once a little animal, no bigger than a fox,
And on five toes he scampered over Tertiary rocks.

They called him Eohippus, and they called him very small,
And they thought him of no value when they thought of him at all.

For the lumpish Dinoceras and Coryphodont so slow
Were the heavy aristocracy in days of long ago.

Said the little Eohippus: "I am going to be a Horse!
And on my middle-finger-nails to run my earthly course!

I'm going to have a flowing tail! I'm going to have a mane!
I'm going to stand fourteen hands high on the Psychozoic plain!"

The Coryphodont was horrified, the Dinoceras shocked;
And they chased young Eohippus, but he skipped away and mocked.

Then they laughed enormous laughter, and they groaned enormous groans,
And they bade young Eohippus "go and view his father's bones!"

Said they: "You always were as low and small as now we see,
And therefor it is evident you're always going to be!

"What! Be a great, tall, handsome beast, with hoofs to gallop on!
Why, you'd have to change your nature!" said the Loxolophodon.

Then they fancied him disposed of, and retired with gait serene;
That was the way they argued in "the Early Eocene."*

* In the *Forum* for June 1, 1894, Mr. E. L. Godkin had an article entitled: *Who will pay the bills of Socialism?* in which he attacked Bellamy's *Looking Backward* from the traditional myopic standpoint of the practical man, and used exactly the same arguments that Mrs. Stetson put into the mouths of "anthropoidal apes" and Neolithic men. He emphasized the well-worn phrase that all such schemes presuppose a change in "human nature." I was so struck with this that I secured an extra copy of the poem and sent it to Mr. Godkin. Before doing so, however, I specially marked this line:

"That was the way they argued in the Early Eocene."

I also connected this line with one of my own that I wrote across the bottom of page, and which read:

"This is the way you argue in the *Forum* magazine."

II.

There was once an Anthropoidal Ape, far smarter than the rest,
And everything that they could do he always did the best;

So they naturally disliked him, and they gave him shoulders cool,
And, when they had to mention him, they said he was a fool.

Cried this pretentious ape one day: "I'm going to be a Man!
And stand upright, and hunt and fight, and conquer all I can!"

I'm going to cut down forest trees to make my houses higher!
I'm going to kill the Mastodon! I'm going to make a Fire!"

Loud screamed the Anthropoidal Apes with laughter wild and gay;
Then tried to catch that boastful one, but he always got away.

So they yelled at him in chorus, which he minded not a whit;
And they pelted him with cocoanuts, which didn't seem to hit.

And then they gave him reasons which they thought of much avail
To prove how his preposterous attempt was sure to fail.

Said the sages: "In the first place, the thing can *not* be done!
And second, if it *could* be, it would not be any fun!

And third and most conclusive, and admitting no reply,
You would have to change your nature! We should like to see you try!"

They chuckled then triumphantly, those lean and hairy shapes;
For these things passed as arguments—with the Anthropoidal Apes!

III.

There was once a Neolithic Man, an enterprising wight,
Who made his simple implements unusually bright.

Unusually clever he, unusually brave,
And he sketched delightful mammoths on the borders of his cave.

To his Neolithic neighbors, who were startled and surprised,
Said he: "My friends, in course of time we shall be civilized!

We are going to live in Cities, and build churches and make laws!
We are going to eat three times a day without the natural cause!

We're going to turn life upside down about a thing called Gold!
We're going to want the earth, and take as much as we can hold!

We're going to wear a pile of stuff outside our proper skins;
We are going to have Diseases! and Accomplishments! and Sins!"

I gave no indication of the source, and Mr. Godkín never knew who sent him the poem, but, Irishman that he was, he undoubtedly enjoyed it all, and if he had been younger it might have made an impression on his mind.

Then they all rose up in fury against their boastful friend;
For prehistoric patience comes quickly to an end.

Said one: "This is chimerical! Utopian! Absurd!"

Said another: "What a stupid life! Too dull, upon my word!"

Cried all: "Before such things can come, you idiotic child,
You must alter Human Nature!" and they all sat back and smiled.

Thought they: "An answer to that last it will be hard to find!"

It was a clinching argument—to the Neolithic Mind!

—"In This Our World."

I have heard a number of persons who had read this poem express regret that the accomplished authoress did not add a fourth stanza and give us a glimpse of what she might conceive the future to have in store. I think myself that she was wiser not to have done this, and that it would be unwise in anyone to attempt it in any serious way; and yet on one occasion when asked to discourse upon Social Evolution from the standpoint of Mr. Benjamin Kidd, I did venture to read a stanza of this nature, in faint imitation of the poem in question. In drafting it I was obliged, for want of the requisite poetic genius and imagination of my own, which, I hardly need say, do not constitute my forte, to draw freely from the rich store of fancy which Mr. Edward Bellamy has given to the world; for although I do not, like so many well meaning people, take his *Utopia* seriously, any more than I do Thomas More's or Plato's, or any of the rest, still I consider that he has done the world a real service in setting up in such an admirable manner an ideal so high and so pure and in awakening thought on the sublimest of all themes, the possibilities of humanity. I therefore offer this additional stanza as a sort of supplement to Mrs. Stetson's poem, not for any literary or poetic merit that I imagine it to have, but rather as a hint to her or any other true poet, such as Mr. Bellamy, who may one day, I hope, favor the world with a genuine poem on *Looking Forward*.

There was once a Yankee romancer, a poet and a seer,
Who told some pretty stories that the ladies loved to hear.

One night Prophetic Genius transported him through time
And set him down in Boston in nineteen ninety-nine,

And bade him then look backward to nineteenth century days
And contrast our awkward doings with wisdom's better ways.

And when at last he wakened from this vision fresh and green
He wove into a romance all the wonders he had seen.

Said he: "In one short century there's going to be a change
That will exceed your wildest dreams in the grandeur of its range.

We're going to banish poverty, and idleness, and gain,
We're going to have equality in fact, as well as name.

We're going to have abundance in this rich land of ours,
And none will need to labor beyond his natural powers."

But the wise men and philosophers, the millionaires and kings,
Declared it was all nonsense to talk about such things.

Said they: "If all were equal who'd do our menial work?
And but for competition all *except us* would shirk."

"To realize," said Godkin, "your nationalistic scheme
'You must alter human nature!'—it is nothing but a dream."

On two occasions, where great familiarity was allowable and audiences were especially indulgent I have introduced this episode into my public lectures. The first was in a lay discourse that I gave at the People's Church in Washington, July 15, 1894, entitled: *Social Salvation by Faith.—An Examination of Kidd's Social Evolution*, and which I have given several times since, but always without this feature; and the second was in my lecture at Greenacre-on-the-Piscataqua, July 19, 1897, on *The Real Moral Evolution*, where it was received with great acclaim.

The American Journal of Sociology, Chicago, Vol. II, No. 6, May, 1897, pp. 801-822; Outlines of Sociology, Chapter XII, pp. 262-293.

May 27, 1897—Ætat. 55.

435. Herbert Spencer's Sociology*

History.—Written May 16, 1897. On January 4, 1897, I received from the publishers a copy of Herbert Spencer's *Principles of Sociology*, Vol. III, doubtless under standing instructions from the author, which had been indicated in the case of all the previous volumes thus received. Impressed with the importance of the completion of the great *Synthetic Philosophy* which had occupied twenty-eight years, and with which I had kept so closely in touch, I wrote Mr. Spencer the following letter:

1464 R. I. AVE.,
WASHINGTON, D. C., U. S. AMERICA,
Jan. 10, 1897.

MR. HERBERT SPENCER,
64 Avenue Road, Regents Park,
London, N. W.

MY DEAR SIR:

Ever since I heard through a letter from Professor Giddings last autumn that you had at last completed your *Synthetic Philosophy*, I have felt a strong impulse to send you a brief note of congratulation. The recent receipt from the American publishers, presumably at your expressed or implied request, of Vol. III of the *Principles of Sociology* has made this impulse no longer resistible, and I desire to couple with my thanks for this and other previous favors, which I may not have always acknowledged, an expression of the profound satisfaction which I feel that such a stupendous undertaking has been brought to a satisfactory conclusion. As for congratulations, it is to the world at large even more than to yourself that they should be addressed, for, as you say in your preface, the sense of relief and emancipation is now much more to you than any expressions of approval from others. Still I cannot help thinking that you must derive some satisfaction in contemplating your life-work as actually

* *The Principles of Sociology*. By Herbert Spencer. In three volumes. Vol. III. New York: D. Appleton & Co.

achieved, and I sincerely hope that a reasonably long extension of your life and faculties may be vouchsafed to you in which to enjoy this contemplation.

With the assurance of my high esteem for yourself and of my appreciation of your vast labors, I remain,

Yours very respectfully,

LESTER F. WARD.

As this letter is not among the few that Mr. Duncan was able to find place for in his *Life and Letters of Herbert Spencer*, when dealing with congratulations received on the completion of the *Synthetic Philosophy*, and as no better place will be found for it, I thought best to introduce it here.

Early in May, 1897, I had finished reading the parts of this volume that had not appeared earlier, and when asked by *Public Opinion* to review this volume I was prepared to do so. When later (see *infra*, Vol. VII, No. 498) I wrote an article on *Herbert Spencer's Sociology* I had forgotten that this review had been given that general title.

Public Opinion, New York, Vol. XXII, No. 21, May 27, 1897, p. 663.

THE last volume of the great "Synthetic Philosophy" of Herbert Spencer was given to the world at the beginning of the present year. This system of philosophy properly began to appear in 1862 with the volume entitled "First Principles," but in fact the "Principles of Psychology," which constitute the fourth and fifth volumes, was first published in 1855 before the scheme itself had been fully developed in the author's mind. There have been other irregularities, the chief of which was the publication of the "Principles of Ethics," constituting the ninth and tenth or last two volumes of the system, between the second and third volumes of the "Principles of Sociology." But as most of these works appeared separately in parts there was much overlapping, and the "Data of Ethics," antedated any part of Vol. II of the "Sociology." The present volume, therefore, though the last to appear, is not the last in the system, but the eighth of the ten volumes comprising it. Another anomaly, which, however, seems chargeable to the publishers, is the republication in this volume of Part VI, "Ecclesiastical Institutions," which had already appeared in its proper place at the end of Vol. II. No reason seems assignable for this other than that of aiming to make the several volumes of nearly the same size! The second volume, containing this part, appeared in 1886, and the part was published separately by Williams and Norgate in London in 1885. We therefore have to do in the present notice only with Parts VII and VIII, treating respectively of Profes-

sional and Industrial Institutions. Professional institutions, as Mr. Spencer ably demonstrates, were developed out of ecclesiastical institutions, or, as it might better be expressed, were products of primitive religions, and he traces them up from their early beginnings and undifferentiated state embodied in the priesthood, through the medicine man and savage dancing ceremonies, to the physician and surgeon, the musician, orator, poet, actor, dramatist, biographer, historian, *littérateur*, philosopher, scientist, judge, lawyer, teacher, architect, sculptor, painter. The above is the order in which he arranges his chapters, but it is clear that all these professions were developing *pari passu* through the various stages of culture, and the order might be modified to almost any extent without prejudice to the facts.

It is upon Mr. Spencer's treatment of "Industrial Institutions" that the greatest interest centers. Forming as it does the virtual, if not the nominal, close of his philosophical career, thus constituting, as it were, his last word to the world, at a time when industrial questions are more prominent than ever before, announced many years ago as in preparation, there was no little curiosity on the part of sociologists and economists acquainted with his general views on such questions to see how he would meet them when at last brought face to face with them in their normal relations to his great scheme of philosophy. It is not too much to say that the general impression has been one of disappointment even by those who best understood his point of view. He fails utterly to set forth the psychologic basis of industrial institutions in the nature and development of the inventive faculty of man, and passes directly to questions of labor and production, and the well-worn problems of political economy, for the proper treatment of which both space and preparation were wholly inadequate. The ethnological side is better presented, and he draws again and again upon the inexhaustible resources of his "Descriptive Sociology." He lays great stress, as he has always done, upon the fundamental social types of militarism and industrialism, and the transition of the laborer from the condition of *status* to that of free contract, but he makes the fatal mistake of attributing the modern struggle of the working classes to throw off the yoke of individualistic and corporate rapacity to a tendency to revert to militarism. He has a horror of "socialism," but is much surer that it is coming than those who are less afraid of it, and his closing chapter on "The New Future," presents a gloomy outlook. It should be added, however, that he regards the present tendencies as only a rhythmic ebb in the great onward flow of human progress, and has an abiding faith in the ultimate complete adjustment of individual to social needs.

July 8, 1897—Ætat. 56.

436. Review of the Science of Mythology *

History.—Written June 27, 1897. The two large volumes arrived on May 20, and I dipped into them from time to time at leisure moments. It was impossible to read them systematically, but in the course of a month I had gained a fair idea of their nature.

Ibid., Vol. XXIII, No. 2, July 8, 1897, p. 55.

THIS superb work might form a fitting close to the laborious life of its distinguished author, and he almost admits that it will be practically his last work. In it he has put together, in systematic form, all the materials that have been accumulating in his "workshop" during the greater part of his life as bearing upon the subject of mythology. But by mythology he does not mean universal savage and barbaric lore and philosophy, at least the work is almost entirely confined to one great race of men—the Aryan race or stock—only rarely and collaterally mentioning even the Semitic mythologies, and leaving wholly out of view the vast mass of story that is now being so actively studied among the many outlying races of Asia, Australia, Africa, and America. While there is not so great a difference as might be supposed between the early mythology of India and, for example, the aboriginal mythology of America, the former acquires a vastly increased interest from the fact that upon it has been built the whole philosophy of the civilized world, while the latter leads nowhere and represents the last stage of a group of races that are disappearing as races from the earth. There is something exceedingly simple in all these primitive myths and only an enthusiast can see anything so very interesting in them, in and of themselves. Just as the sayings of children interest only the fond parent, so the stories of savages seem jejune to all

* *The Science of Mythology. Contributions to the Science of Mythology.* By the Right Hon. Professor F. Max Müller, K. M. In two vols. Cloth. Vol. I., pp. xxxvi + 425; Vol. II., pp. ix + 439; \$8. New York: Longmans, Green & Co.

but the ethnologist. It is certain that any civilized race could, if it were to go about it, invent a much more ingenious and plausible cosmology than any that have been invented by savages, or have come down to us from the early ancestors of our own race. But the interest begins in the latter case when we come to follow these stories with all the *dramatis personae* from one race to another, and from one part of the world to another. This is what is done for us in this book, and the reader quickly learns to forget all that seems at first tame or even stupid, and to concentrate his attention upon the profound historical significance in the recurrence in unexpected places of the most commonplace and trivial circumstances.

Professor Max Müller has been called "orthodox," and a considerable part of the work, especially of the first volume, is devoted to a semi-controversial defense of the philological method and of his own peculiar method against the attacks of Andrew Lang, Mr. Gladstone, Herbert Spencer, and other critics, yet the reader cannot fail to be highly edified even by the most controversial parts of the work. But toward the close of the first volume and throughout the second, as the author gets deeper and deeper into the heart of his subject, the interest correspondingly deepens, and when he proceeds to trace one after another of the myths, and names, and personages from the Vedas down through Zend lore and then into Greek and Roman literature, or on into the philosophy of the Northmen, the greatness of the Aryan race slowly looms up before the reader's mind, and the history of the movement of that race across the Eurasian continent is made vividly clear. But aside from this didactic value that stands out so strong, there is the growing charm that inheres in the stories themselves in connection with the cosmogonic significance of the characters and events. One of the most striking points brought out is the fact that the farther back we go, and the ruder the civilization that has brought forth these myths, the less do the names of the respective gods differ from the natural phenomena that they personify and preside over. By the time they have filtered through into the Hellenic mind the gods have names separate from what they represent, but "Agni means fire in Sanskrit to the present day. Dyaus, though no longer used as a masculine, means sky as a feminine in post-Vedic as well as in Vedic-Sanskrit; Prithivi continues to mean the earth; anila, wind; ap, water; aranyani, forest; aryaman, sun; indu, moon; indrakapa, rainbow; ida, earth; ushas, dawn; varuna, ocean, etc." All these are the names of those mythic beings whose lines and exploits are traced and recorded, and it is clear that primarily the poets of India, like Bunyan in "Pilgrim's Progress," directly personified the qualities, attributes, events, and phenomena, and that it is only later races, borrowing their myths and adopting their names with slight modifications, who have created a new

pantheon of distinct deities to preside over these respective domains.

Much light is also shed on the so-called "Aryan Separation" and its very early date, so early that after it took place and carried a whole philosophy across to the Baltic sea and Atlantic ocean, new personages of the highest rank, such as Indra himself, arose in India and came to dominate its philosophy, while Thor must be traced back to a date anterior to the Vedic age. But as no brief account, such as can be given here, can hope to become even a description of the book itself, these enumerations of its attractions may as well end at one point as at another, and we will go no farther, but will commend the whole work to the reader, certain that no amount of praise will be esteemed too great.

